FY-2018 Basin Highlights Report
&
FY-2019 Coordinated Monitoring

RED RIVER BASIN
ADVISORY COMMITTEE MEETING

APRIL 19, 2018 – WICHITA FALLS, TEXAS

JOSE MARTINEZ, JR.
CRP PROJECT MANAGER

Presentation Overview

- What is the Clean Rivers Program
- Surface Water Quality Data
- Water Quality Parameters
- Water Quality Monitoring in the Red River Basin

What is the Clean Rivers Program

- A partnership between the TCEQ and regional water authorities to coordinate and conduct water quality monitoring, assessment, and stakeholder participation to improve the quality of surface water within each river basin in Texas
  - Provide quality-assured data to the TCEQ for use in decision-making
  - Identify and evaluate water quality issues
  - Promote cooperative watershed planning
  - Recommend management strategies
  - Inform and engage stakeholders
  - Maintain efficient use of public funds

Water Quality Parameters - Assessed

- Water quality is assessed every two years by TCEQ
- *Texas Integrated Report* (*IR*)
- *2014 IR* is the most current approved assessment
  - Currently working on the *Draft 2016 IR*
- Impairments versus Concerns
  - Impairments – 303(d)
  - Concerns – 305(b)
- There are two types of Concerns
  - CS – concern for water quality based on screening level
  - CN – concern for near non-attainment of the water quality standard

Water Quality Parameters - Assessed

- Segments identify waterbodies
  - Classified – example 0214
  - Unclassified – example 0214B
- Segments are comprised of smaller units
  - Assessment Units (AUs) – 0214B_01
- Assessment Units contain monitoring stations
- This is where the water quality data used for assessments and trend analysis comes from
  - Monitoring Station 10094, Buffalo Creek at FM 1814

Water Quality Parameters

- Solids / Dissolved Solids
  - TSS / TDS / chloride / sulfate
- Nutrients
  - Ammonia / nitrate / total phosphorus / chlorophyll-*a* / TKN
- Bacteria
  - *E. coli* / *Enterococcus*
- Aquatic Health
  - Dissolved oxygen / pH / temperature

Water Quality Monitoring in the Red River Basin

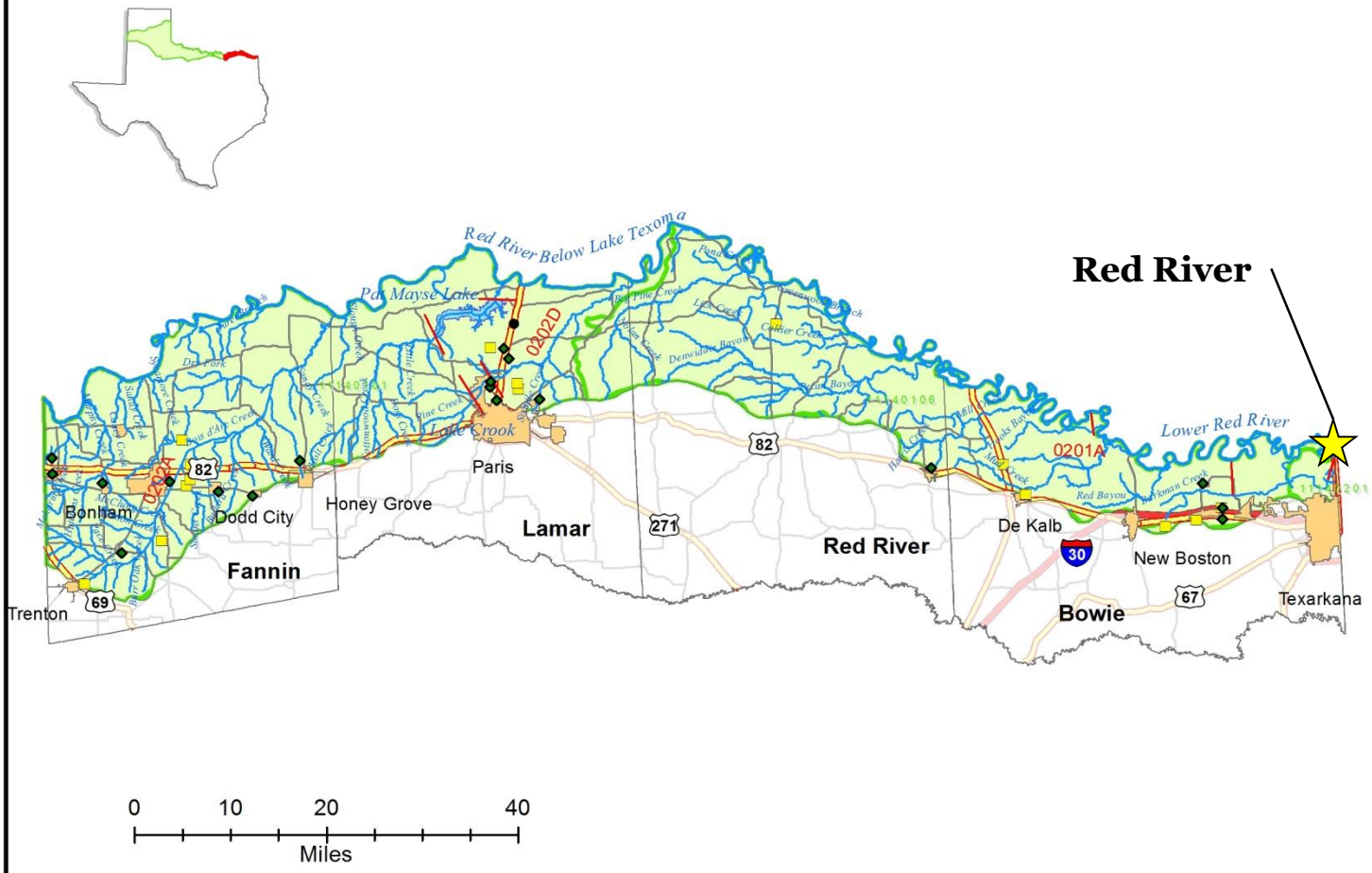
Entity	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
RRA	72	71	77	80	80
TCEQ	19	17	19	19	19
USGS	30	30	30	30	30
City of Sherman	9	9	9	7	7
NTMWD	7	6	7	7	7
Total	**137**	**133**	**142**	**143**	**143**

Red and Canadian River Basins
Vicinity Map

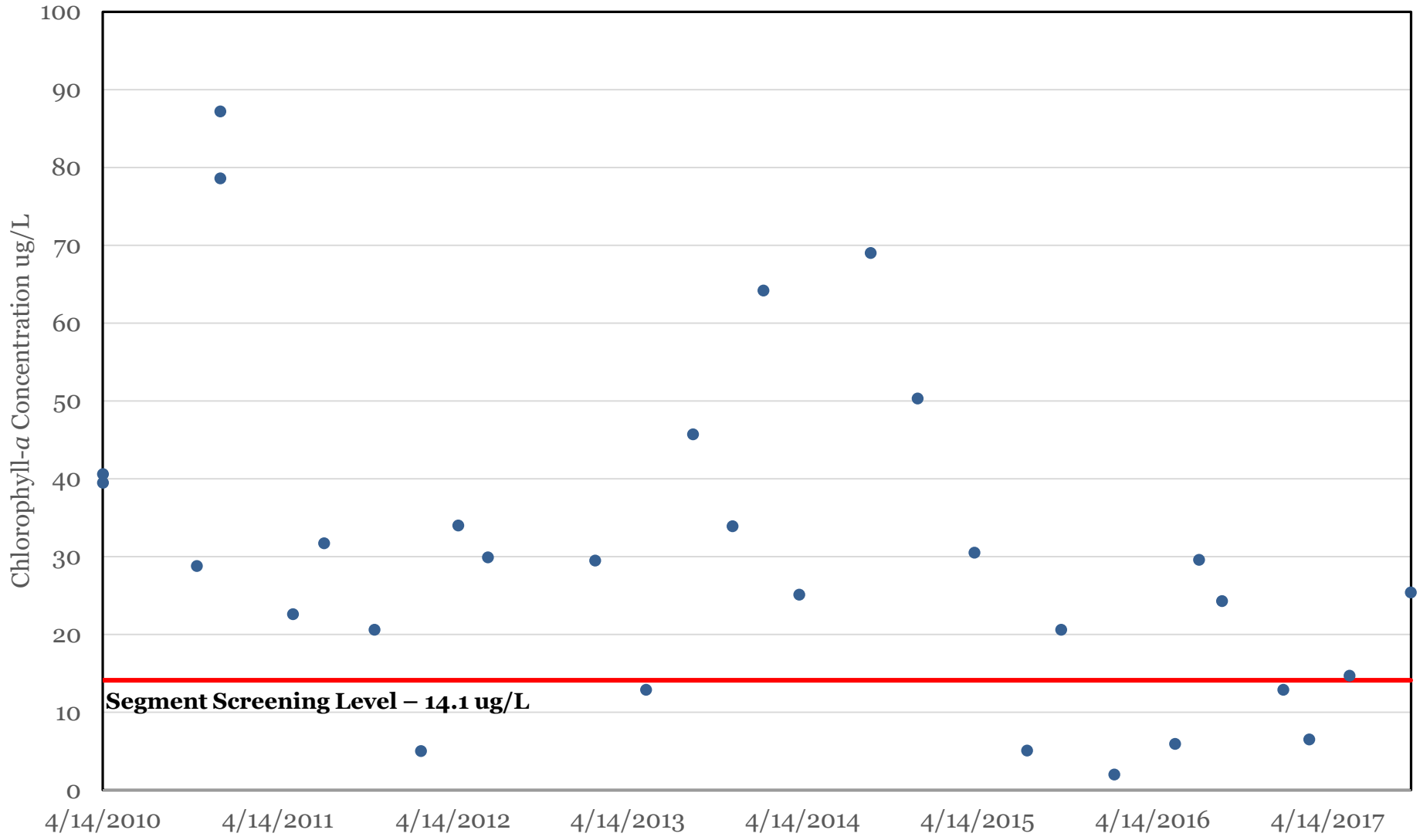
Red River Basin – Reach I Lower

- Lower Red River (0201)
  - No impairments
  - Chlorophyll-*a* concern
- Mud Creek (0201A)
- Red River Below Lake Texoma (0202)
- Bois D' Arc Creek (0202A)
- Pecan Bayou (0202C)
- Pine Creek (0202D)
- Smith Creek (0202G)
- Big Pine Creek (0202H)
- Little Pine Creek (0202I)
- Honey Grove Creek (0202L)
- Lake Bonham (0202M)
- Lake Crook (0208)
- Pay Mayse Lake (0209)

Red River Basin
Lower Reach I



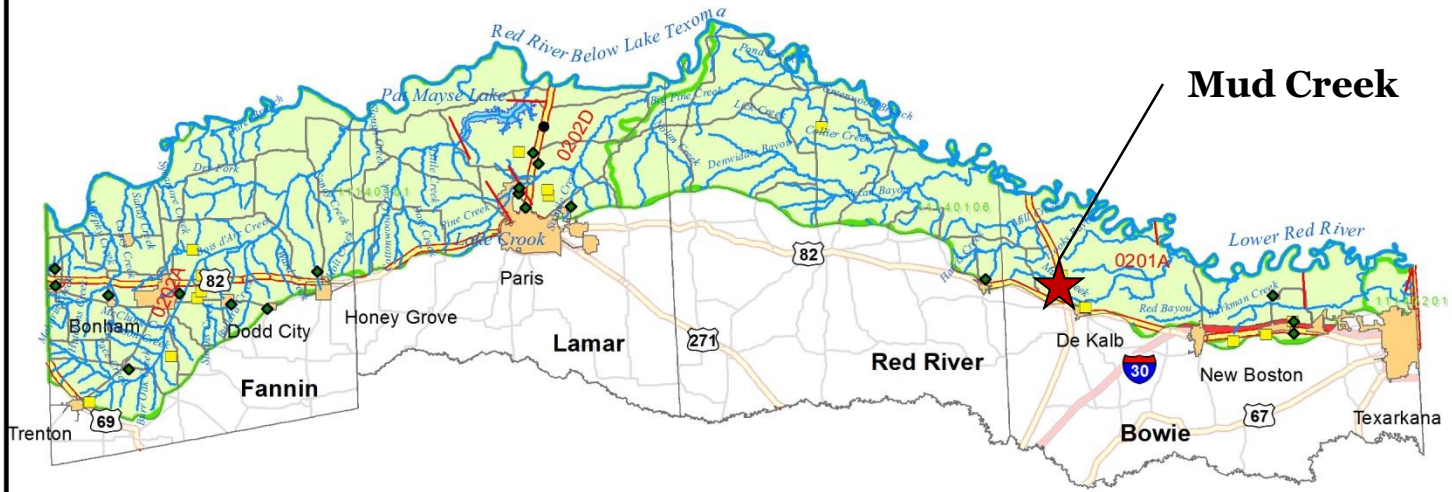
Lower Red River
Segment 0201_01
Chlorophyll-*a*

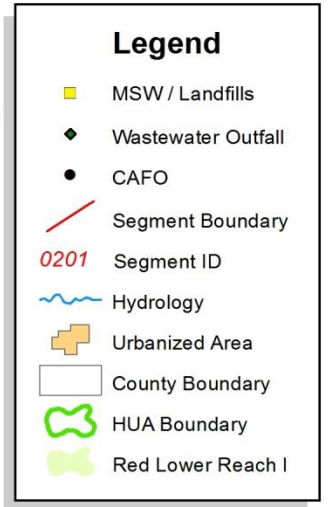


Red River Basin – Reach I Lower

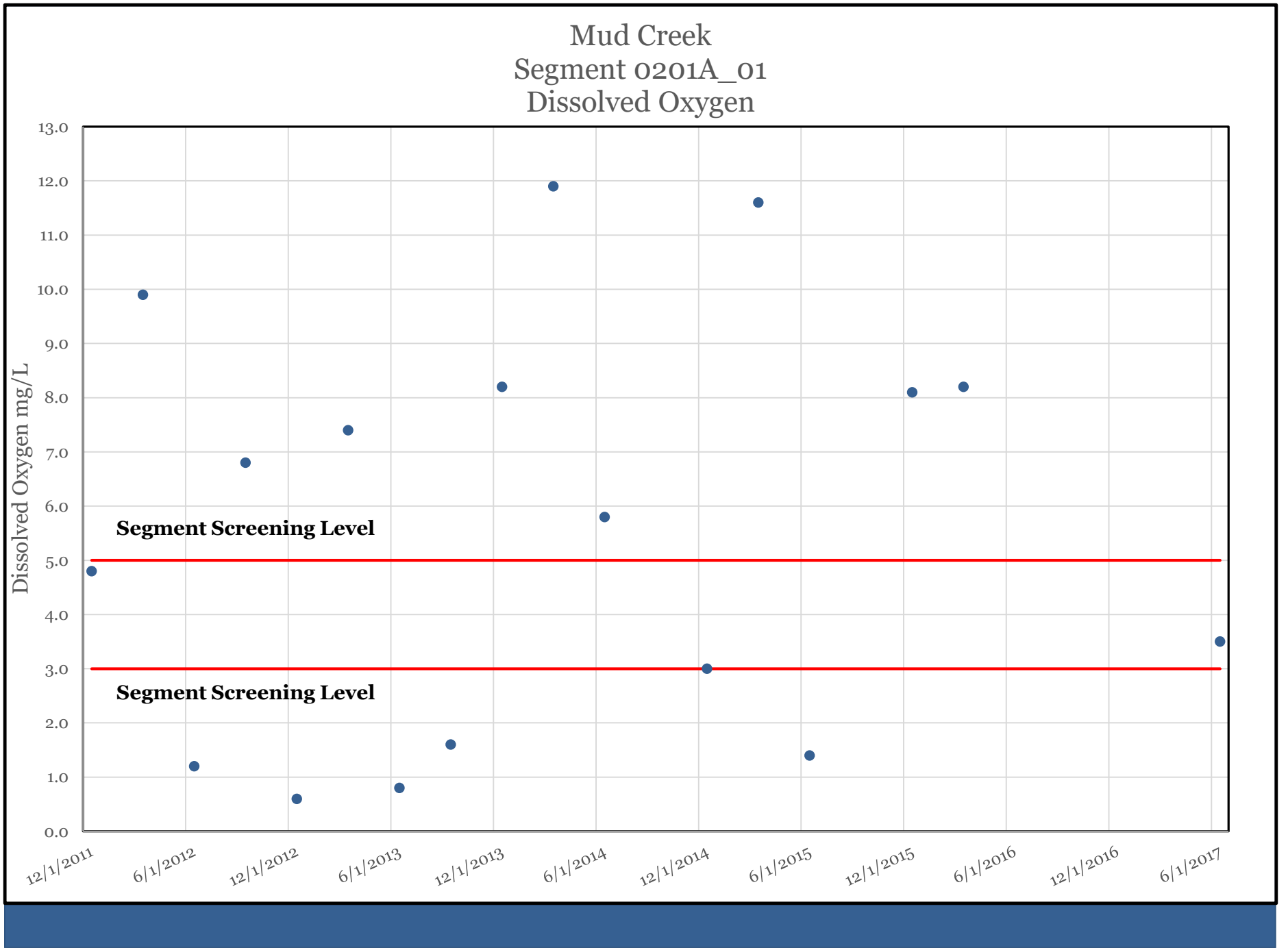
- Lower Red River (0201)
- Mud Creek (0201A)
  - Bacteria and depressed DO impairments
  - Ammonia and depressed DO concerns
  - RUAA submitted to TCEQ proposed SCR1
- Red River Below Lake Texoma (0202)
- Bois D' Arc Creek (0202A)
- Pecan Bayou (0202C)
- Pine Creek (0202D)
- Smith Creek (0202G)
- Big Pine Creek (0202H)
- Little Pine Creek (0202I)
- Honey Grove Creek (0202L)
- Lake Bonham (0202M)
- Lake Crook (0208)
- Pay Mayse Lake (0209)

Red River Basin
Lower Reach I

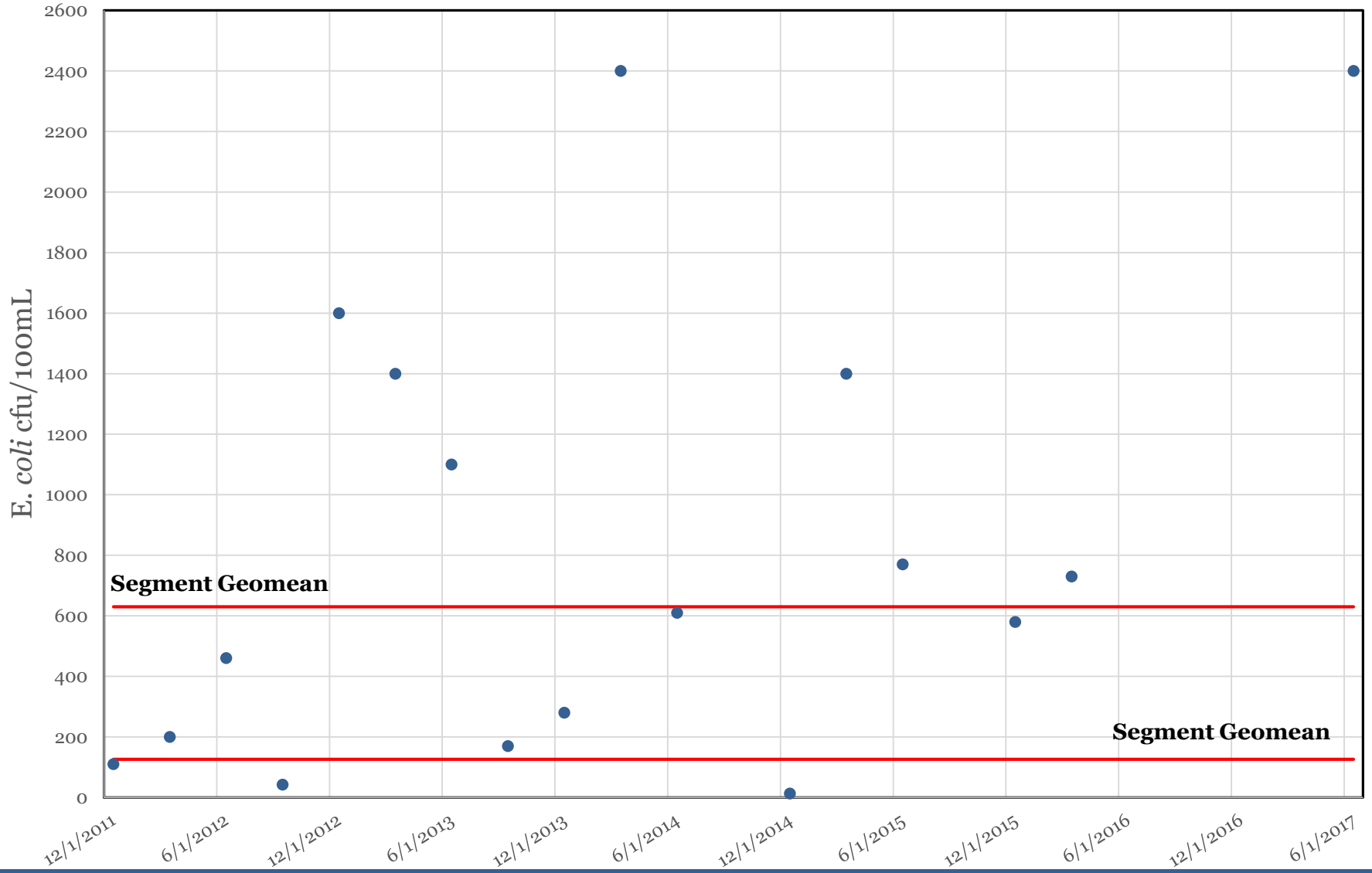




Mud Creek at US 259 – December 4, 2017


Mud Creek
Segment 0201A_01
Dissolved Oxygen
Dissolved Oxygen mg/L
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Segment Screening Level
Segment Screening Level
12/1/2011
6/1/2012
12/1/2012
6/1/2013
12/1/2013
6/1/2014
12/1/2014
6/1/2015
12/1/2015
6/1/2016
12/1/2016
6/1/2017

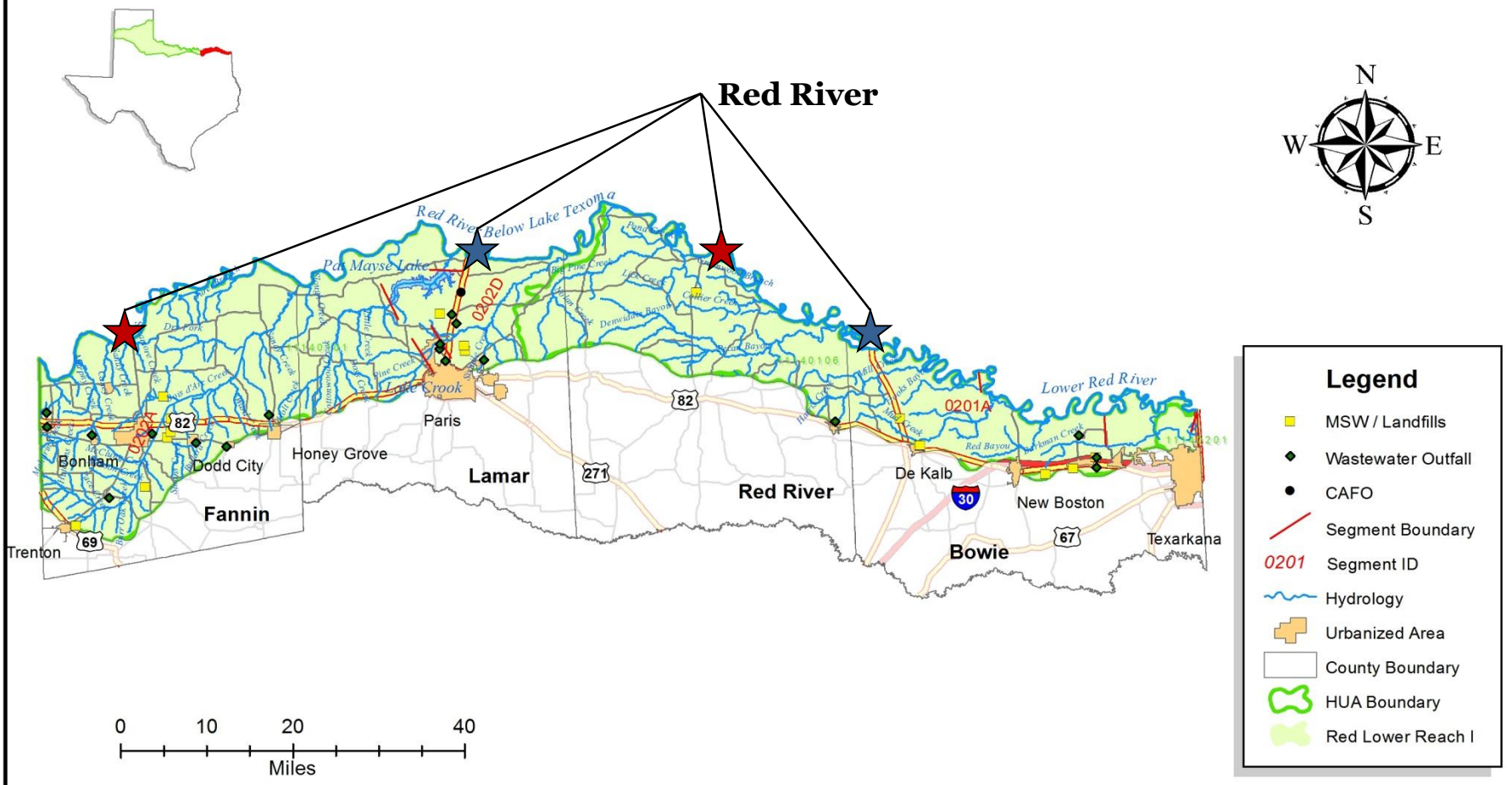
Mud Creek
Segment 0201A_01
E. *coli*



Red River Basin – Reach I Lower

- Lower Red River (0201)
- Mud Creek (0201A)
- Red River Below Lake Texoma (0202)
  - No impairments
  - Chlorophyll-*a* concern
- Bois D' Arc Creek (0202A)
- Pecan Bayou (0202C)
- Pine Creek (0202D)
- Smith Creek (0202G)
- Big Pine Creek (0202H)
- Little Pine Creek (0202I)
- Honey Grove Creek (0202L)
- Lake Bonham (0202M)
- Lake Crook (0208)
- Pay Mayse Lake (0209)

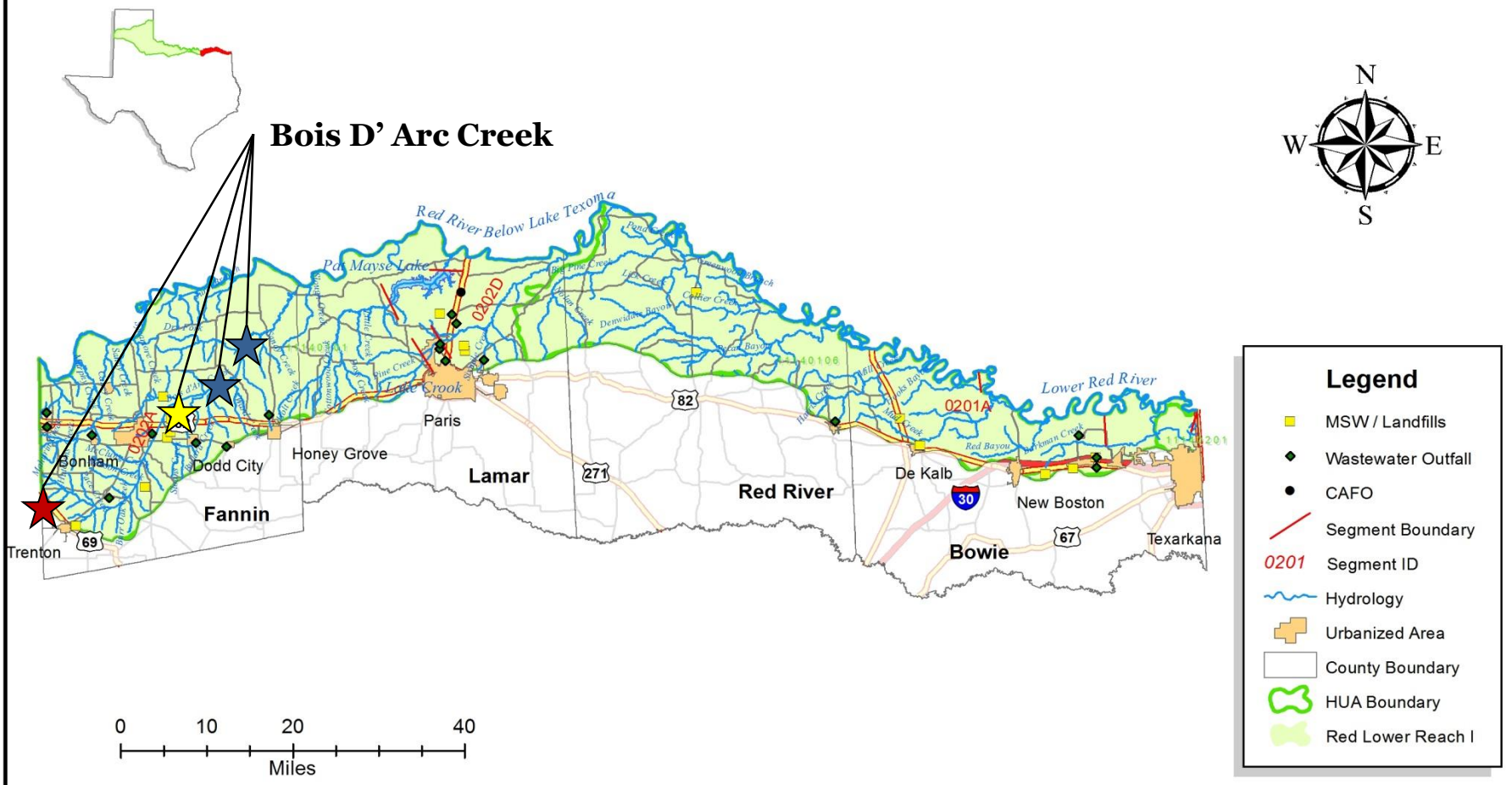
Red River Basin
Lower Reach I



Red River Basin – Reach I Lower

- Lower Red River (0201)
- Mud Creek (0201A)
- Red River Below Lake Texoma (0202)
- Bois D' Arc Creek (0202A)
  - No impairments or concerns
  - RUAA has been completed and submitted to TCEQ for review
- Pecan Bayou (0202C)
- Pine Creek (0202D)
- Smith Creek (0202G)
- Big Pine Creek (0202H)
- Little Pine Creek (0202I)
- Honey Grove Creek (0202L)
- Lake Bonham (0202M)
- Lake Crook (0208)
- Pay Mayse Lake (0209)

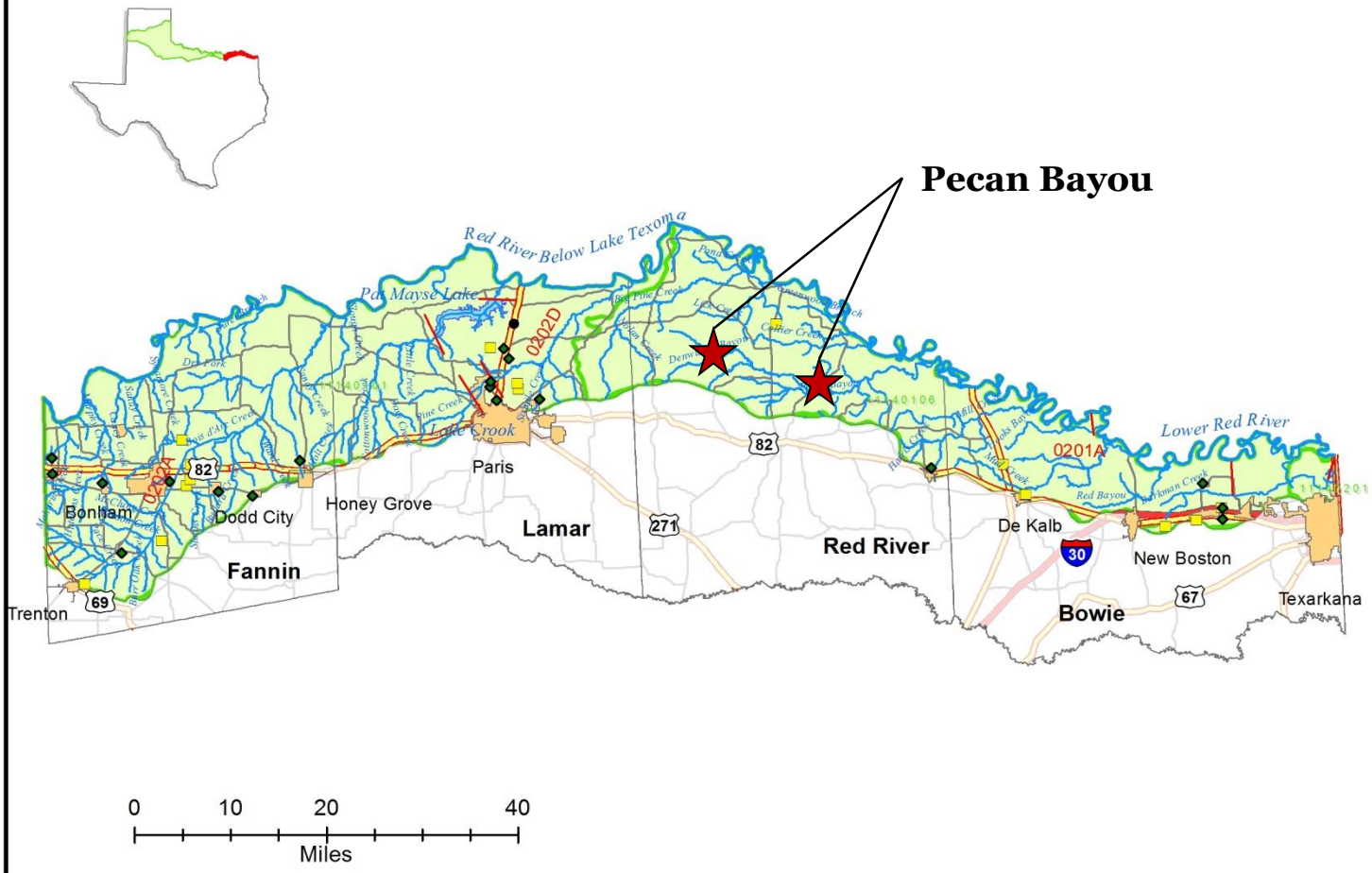
Red River Basin
Lower Reach I



Red River Basin – Reach I Lower

- Lower Red River (0201)
- Mud Creek (0201A)
- Red River Below Lake Texoma (0202)
- Bois D' Arc Creek (0202A)
- Pecan Bayou (0202C)
  - No impairments or concerns
- Pine Creek (0202D)
- Smith Creek (0202G)
- Big Pine Creek (0202H)
- Little Pine Creek (0202I)
- Honey Grove Creek (0202L)
- Lake Bonham (0202M)
- Lake Crook (0208)
- Pay Mayse Lake (0209)

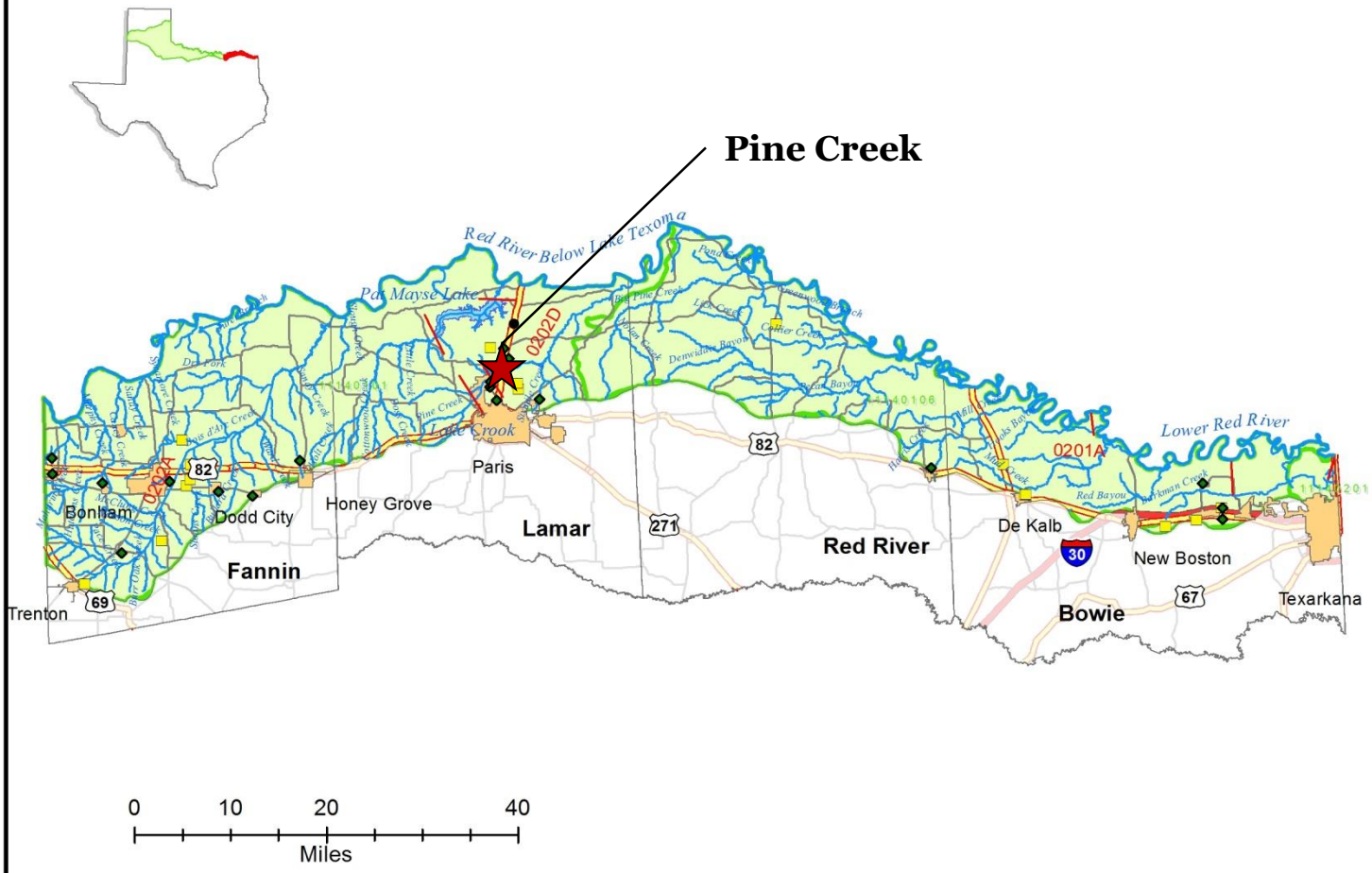
Red River Basin
Lower Reach I



Red River Basin – Reach I Lower

- Lower Red River (0201)
- Mud Creek (0201A)
- Red River Below Lake Texoma (0202)
- Bois D' Arc Creek (0202A)
- Pecan Bayou (0202C)
- Pine Creek (0202D)
  - No impairments
  - Chlorophyll-*a* concern
- Smith Creek (0202G)
- Big Pine Creek (0202H)
- Little Pine Creek (0202I)
- Honey Grove Creek (0202L)
- Lake Bonham (0202M)
- Lake Crook (0208)
- Pay Mayse Lake (0209)

Red River Basin
Lower Reach I

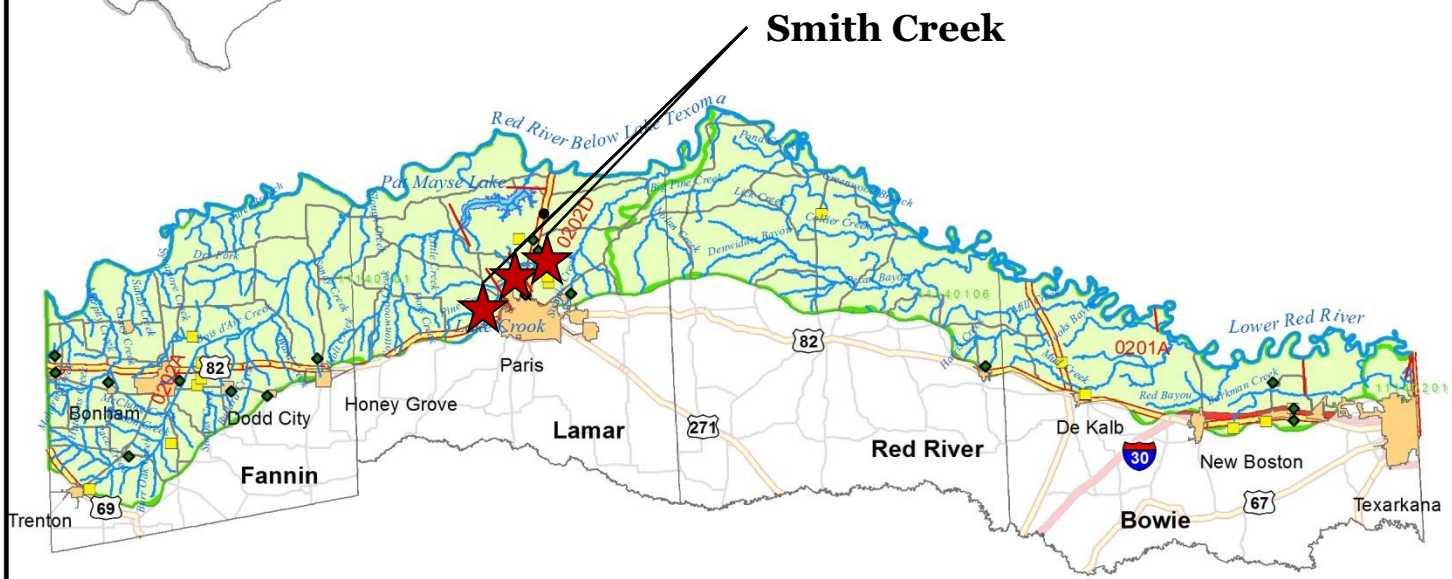


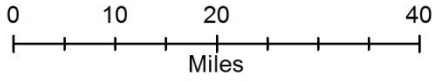
Pine Creek at US 271 – March 12, 2018

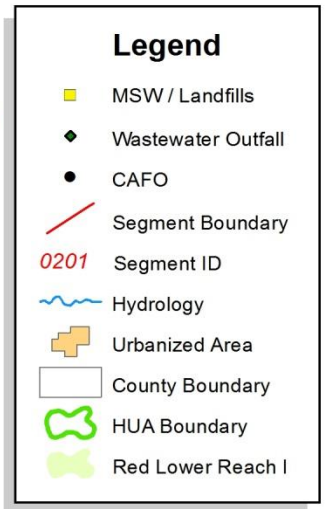
Red River Basin – Reach I Lower

- Lower Red River (0201)
- Mud Creek (0201A)
- Red River Below Lake Texoma (0202)
- Bois D' Arc Creek (0202A)
- Pecan Bayou (0202C)
- Pine Creek (0202D)
- Smith Creek (0202G)
  - Bacteria Impairment
  - Ammonia and total phosphorus concerns
  - RUAA has been completed and submitted to TCEQ for review
- Big Pine Creek (0202H)
- Little Pine Creek (0202I)
- Honey Grove Creek (0202L)
- Lake Bonham (0202M)
- Lake Crook (0208)
- Pay Mayse Lake (0209)

Red River Basin
Lower Reach I

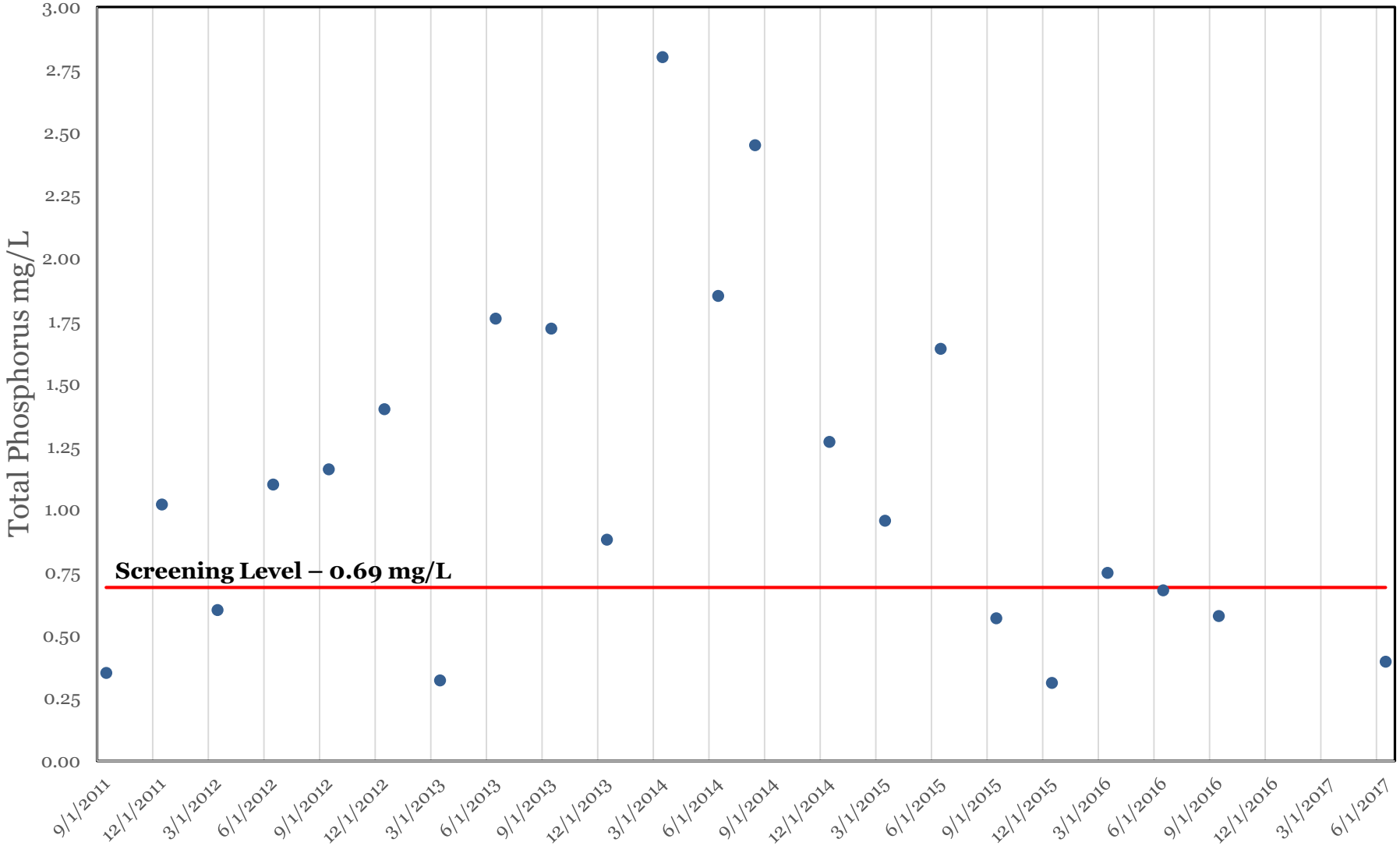






Smith Creek at US271 – March 13, 2017

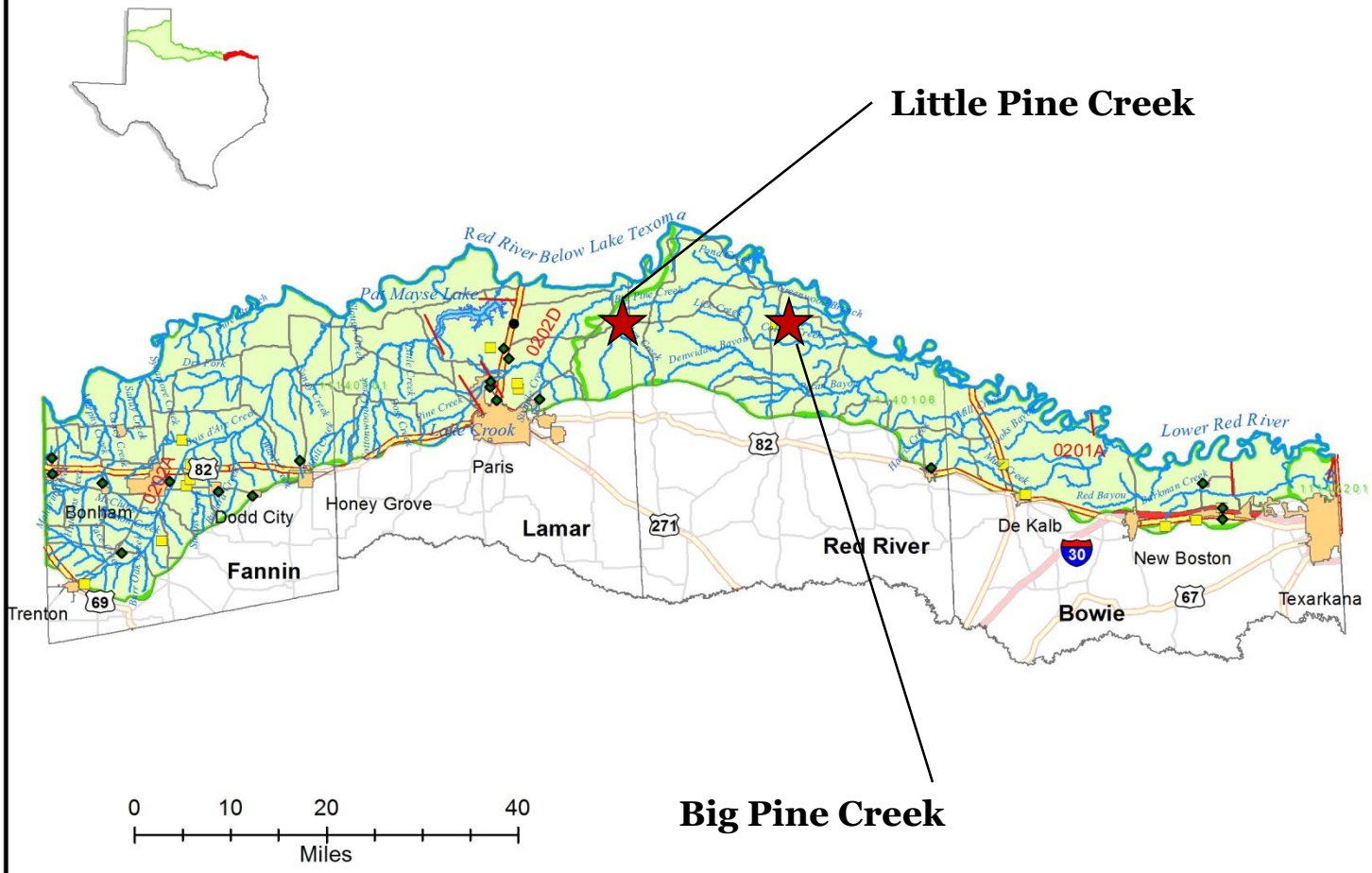
Smith Creek
Segment 0202G_01
Total Phosphorus



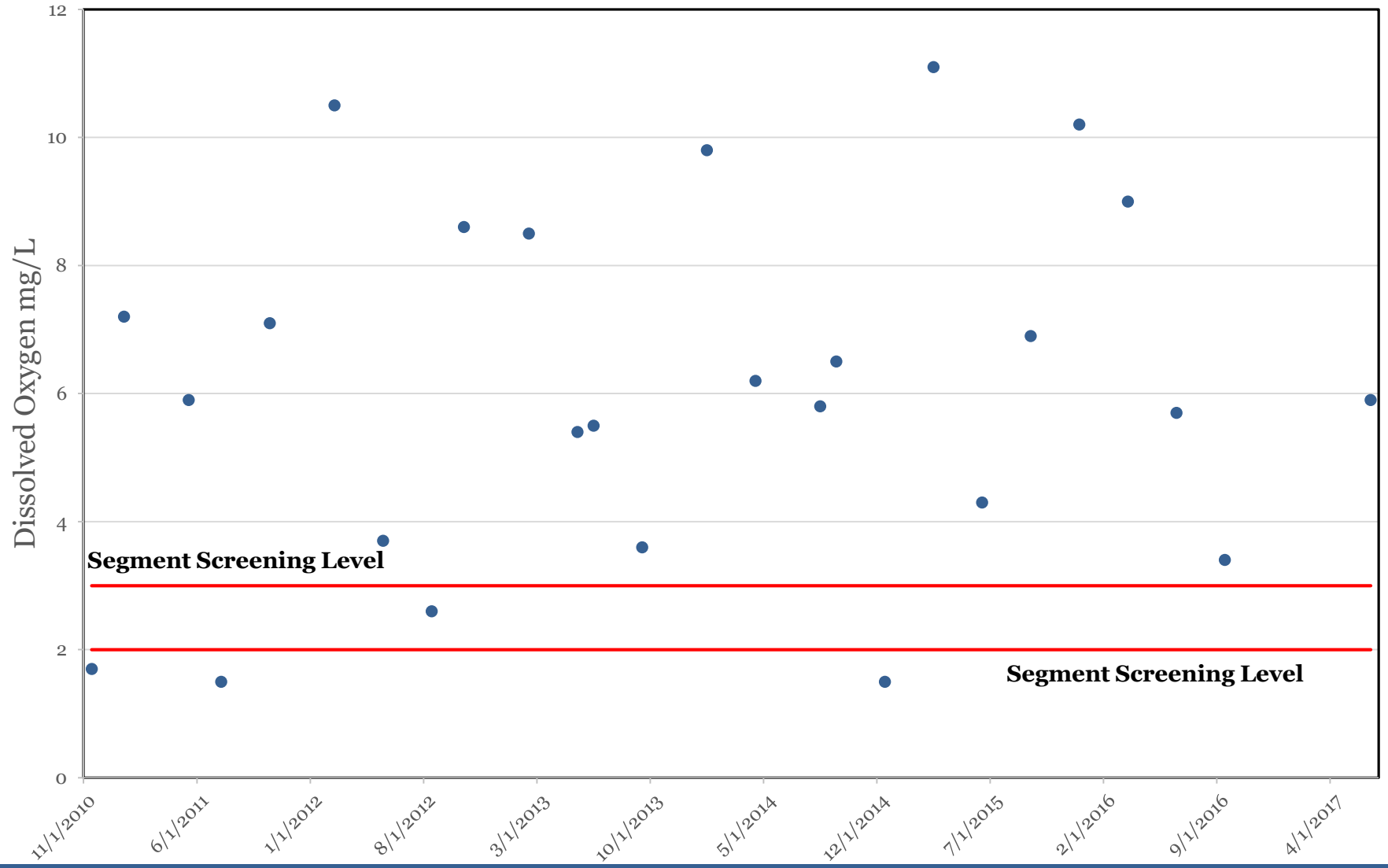
Red River Basin – Reach I Lower

- Lower Red River (0201)
- Mud Creek (0201A)
- Red River Below Lake Texoma (0202)
- Bois D' Arc Creek (0202A)
- Pecan Bayou (0202C)
- Pine Creek (0202D)
- Smith Creek (0202G)
- Big Pine Creek (0202H)
  - No impairments or concerns
- Little Pine Creek (0202I)
  - Depressed DO impairment
  - Chlorophyll-*a* and depressed DO concerns
- Honey Grove Creek (0202L)
- Lake Bonham (0202M)
- Lake Crook (0208)
- Pay Mayse Lake (0209)

Red River Basin
Lower Reach I



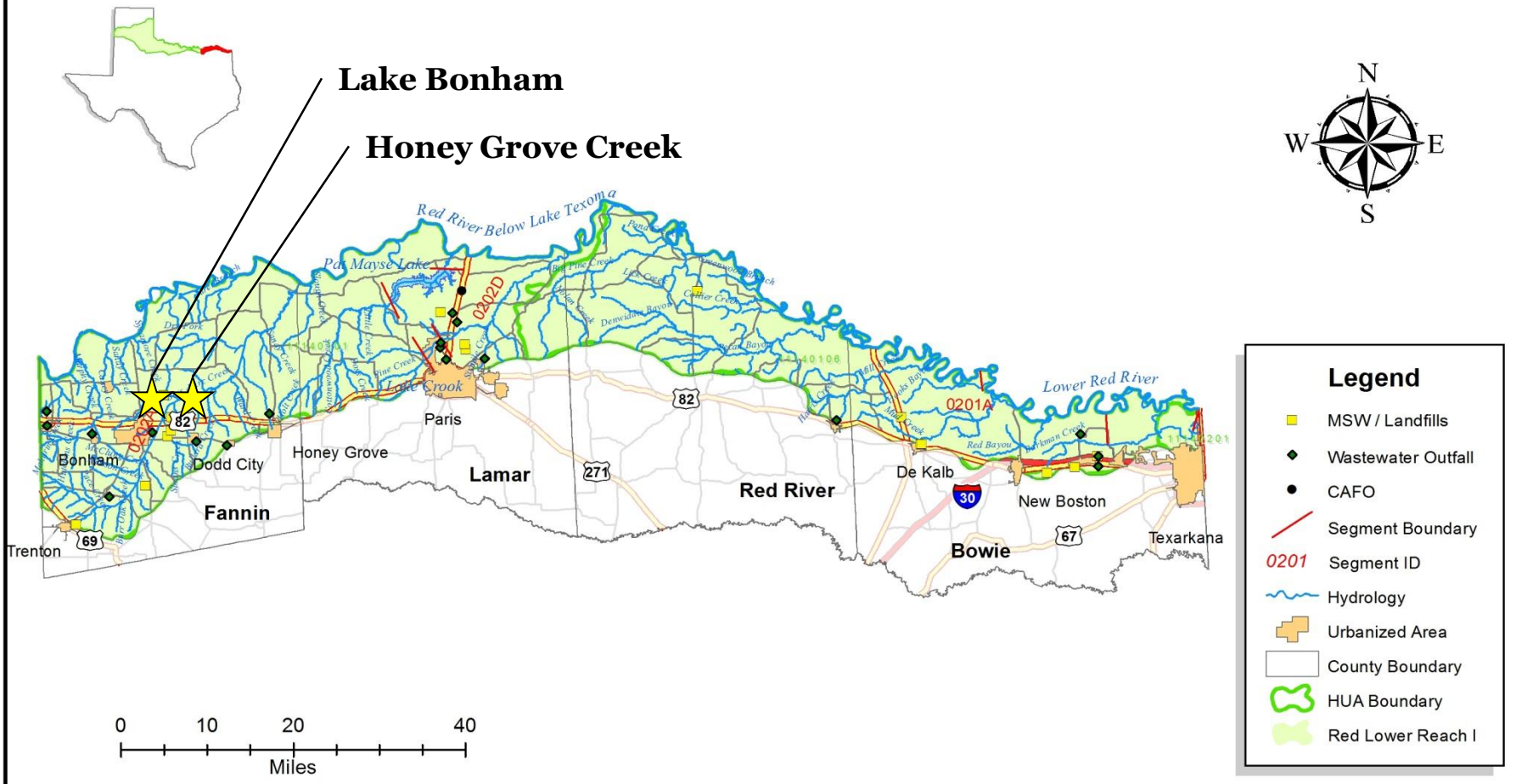
Little Pine Creek
Segment 0202I_01
Dissolved Oxygen



Red River Basin – Reach I Lower

- Lower Red River (0201)
- Mud Creek (0201A)
- Red River Below Lake Texoma (0202)
- Bois D' Arc Creek (0202A)
- Pecan Bayou (0202C)
- Pine Creek (0202D)
- Smith Creek (0202G)
- Big Pine Creek (0202H)
- Little Pine Creek (0202I)
- Honey Grove Creek (0202L)
  - No impairments
  - Bacteria, chlorophyll-*a*, and total phosphorus
- Lake Bonham (0202M)
  - No impairments
  - Chlorophyll-*a* concern
- Lake Crook (0208)
- Pay Mayse Lake (0209)

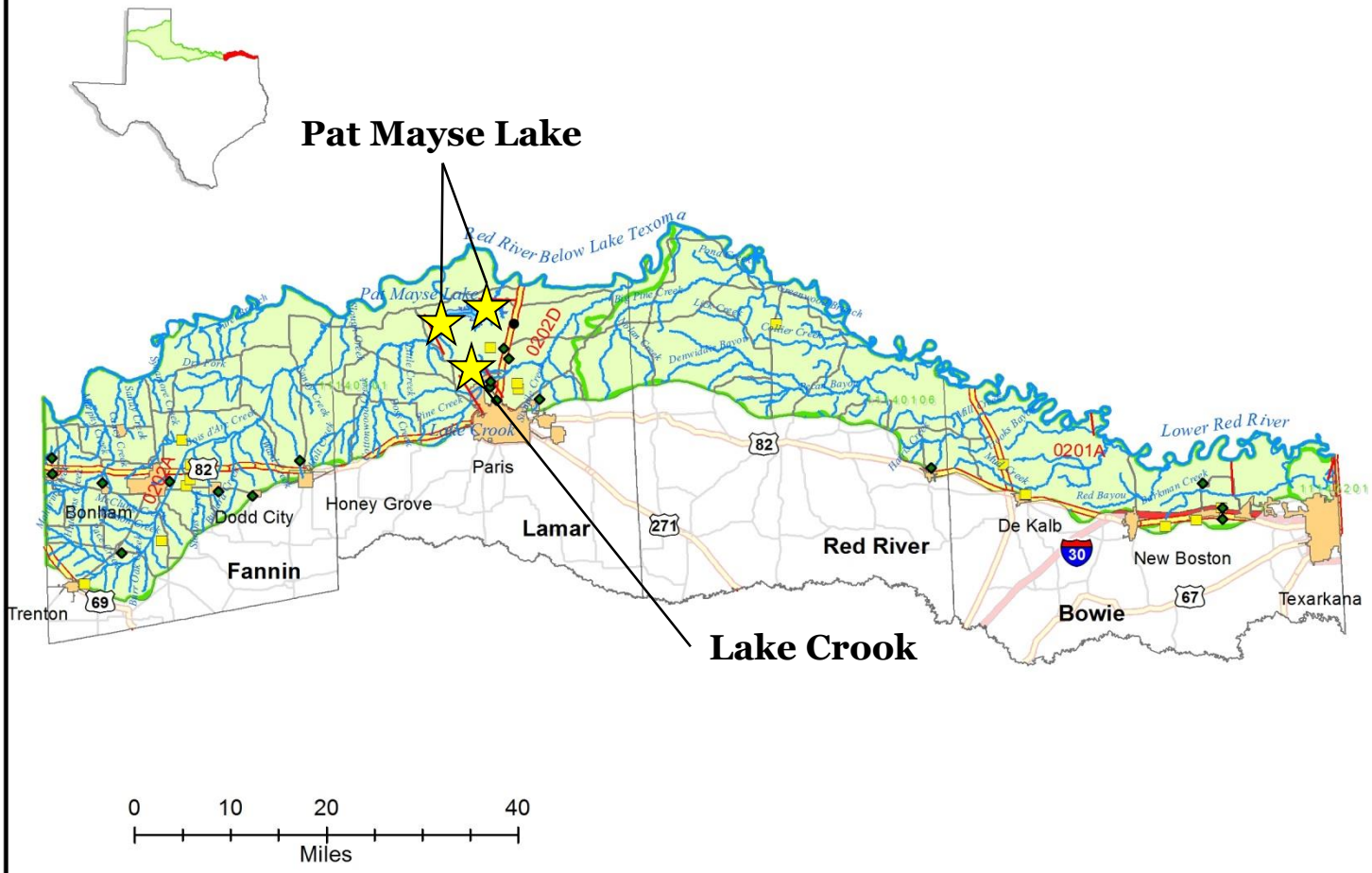
Red River Basin
Lower Reach I



Red River Basin – Reach I Lower

- Lower Red River (0201)
- Mud Creek (0201A)
- Red River Below Lake Texoma (0202)
- Bois D' Arc Creek (0202A)
- Pecan Bayou (0202C)
- Pine Creek (0202D)
- Smith Creek (0202G)
- Big Pine Creek (0202H)
- Little Pine Creek (0202I)
- Honey Grove Creek (0202L)
- Lake Bonham (0202M)
- Lake Crook (0208)
  - No impairments or concerns
- Pat Mayse Lake (0209)
  - No impairments
  - Chlorophyll-*a* and manganese in sediment concerns

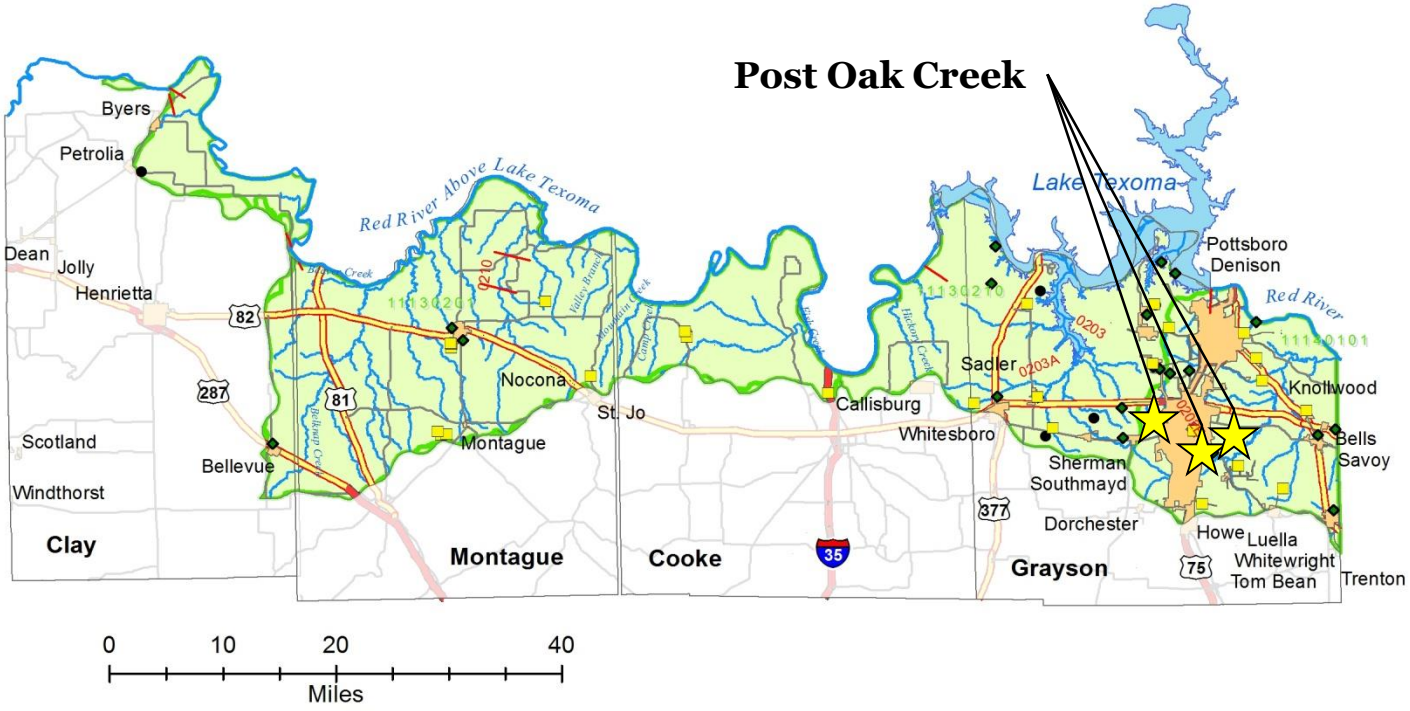
Red River Basin
Lower Reach I



Red River Basin – Reach I Upper

- Post Oak Creek (0202E)
  - No impairments
  - Nitrate and total phosphorus concerns
- Choctaw Creek (0202F)
- Sand Creek (0202J)
- Iron Ore Creek (0202K)
- Lake Texoma (0203)
- Big Mineral Creek (0203A)
- Red River Above Lake Texoma (0204)
- Moss Lake (0204B)
- Farmer's Creek Reservoir (0210)

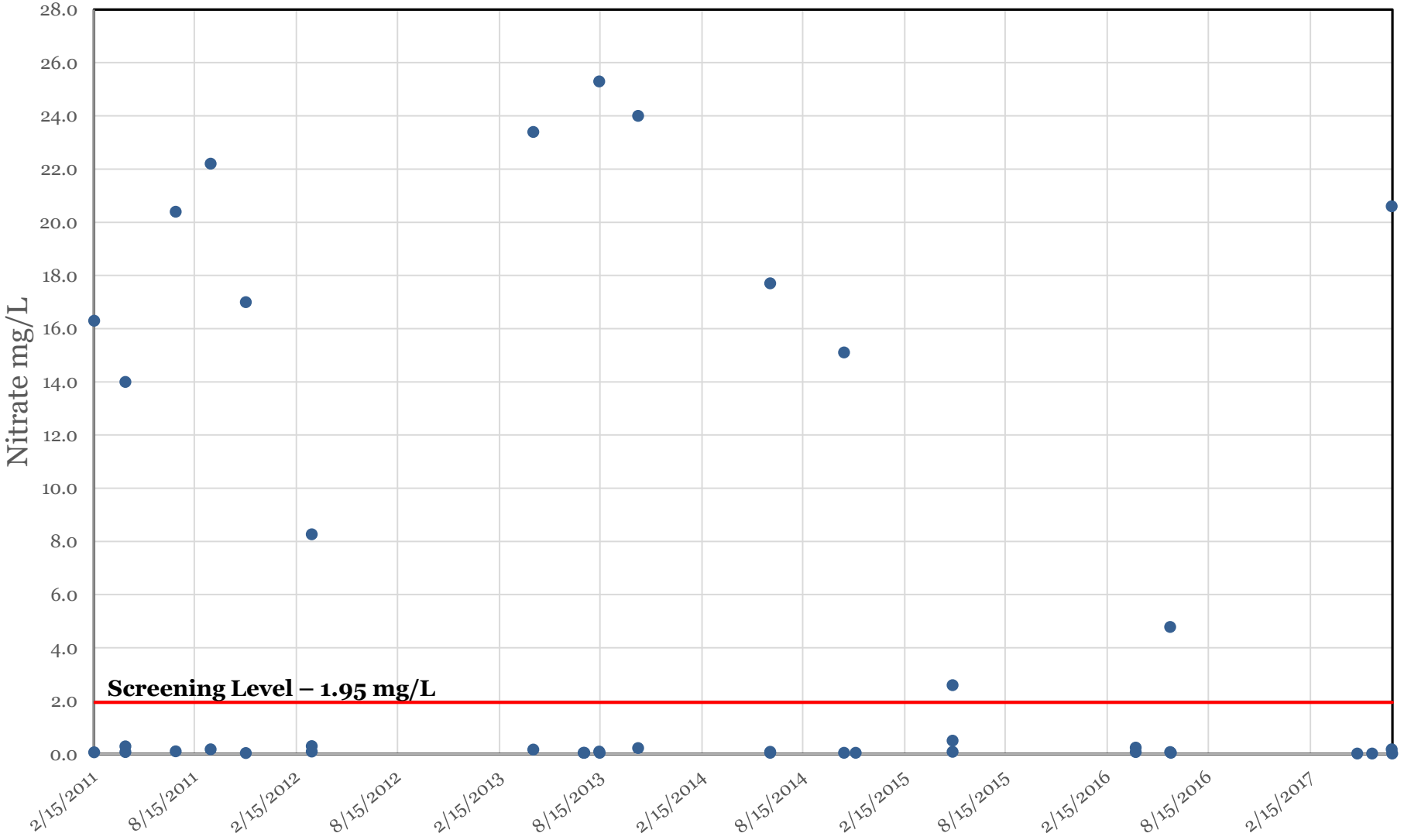
Red River Basin
Upper Reach I



Legend

- MSW / Landfill
- Wastewater Outfall
- CAFO
- Superfund Site
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Upper Reach I

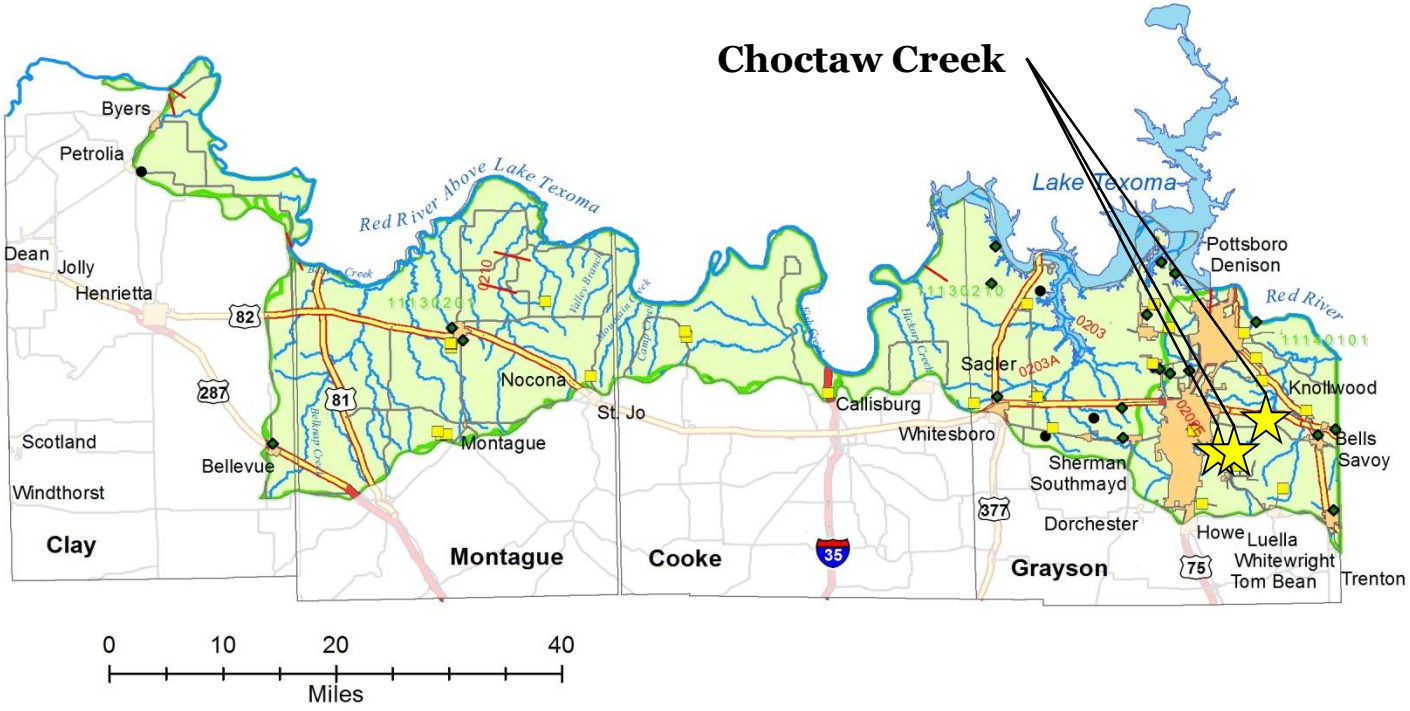
Post Oak Creek
Segment 0202E_01
Nitrate

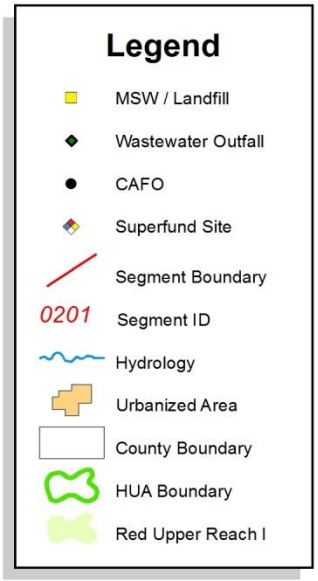


Red River Basin – Reach I Upper

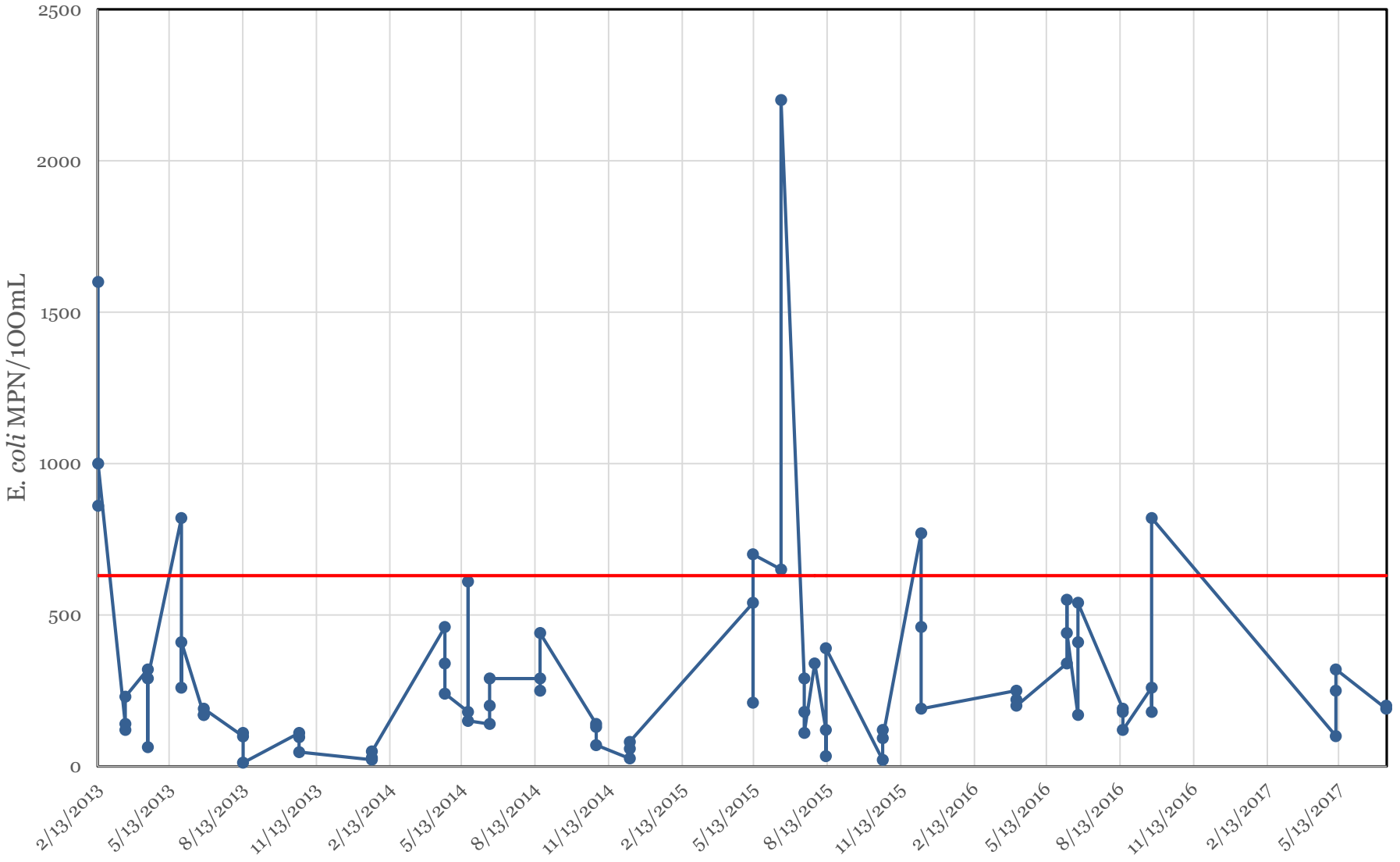
- Post Oak Creek (0202E)
- Choctaw Creek (0202F)
  - Bacteria impairment
  - Nitrate and total phosphorus concerns
  - RUAA has been completed and submitted to TCEQ for review
- Sand Creek (0202J)
- Iron Ore Creek (0202K)
- Lake Texoma (0203)
- Big Mineral Creek (0203A)
- Red River Above Lake Texoma (0204)
- Moss Lake (0204B)
- Farmer's Creek Reservoir (0210)

Red River Basin
Upper Reach I





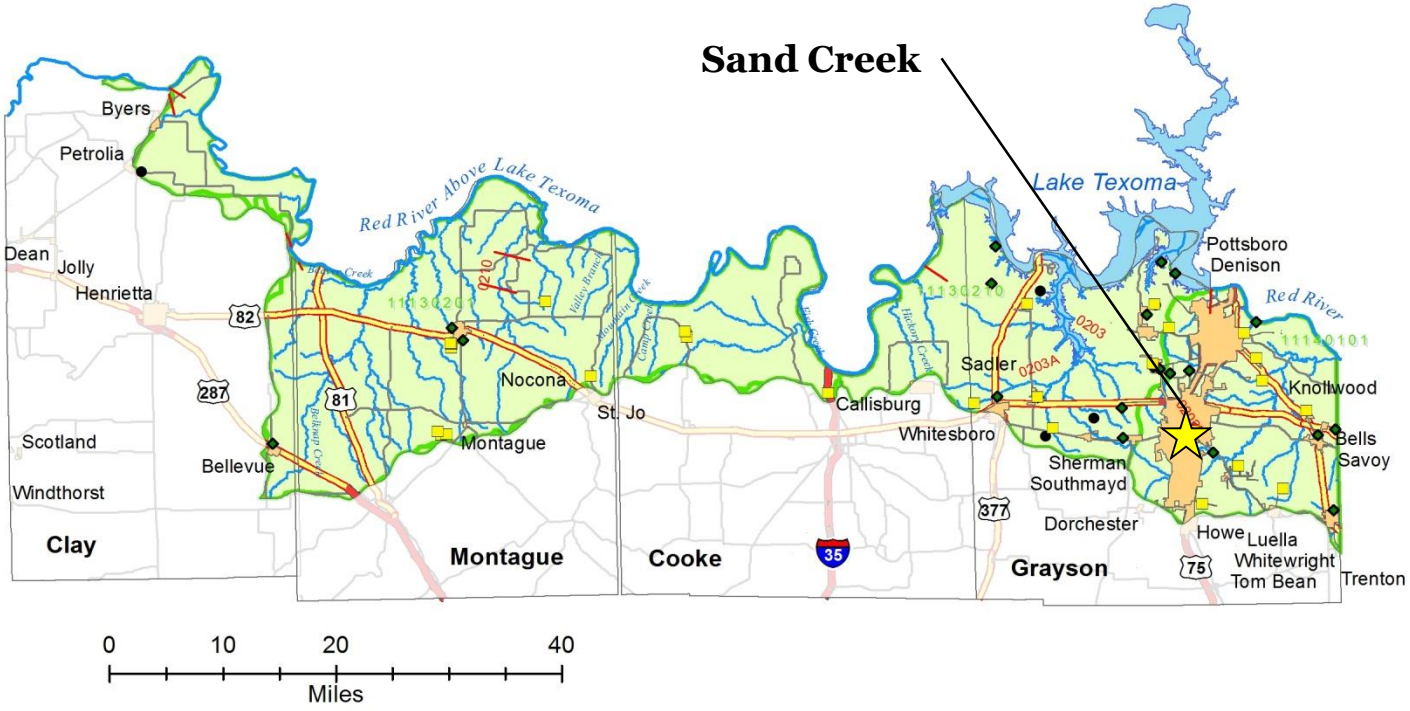
Choctaw Creek
Segment 0202F_02
E. *coli*



Red River Basin – Reach I Upper

- Post Oak Creek (0202E)
- Choctaw Creek (0202F)
- Sand Creek (0202J)
  - No impairments or concerns
- Iron Ore Creek (0202K)
- Lake Texoma (0203)
- Big Mineral Creek (0203A)
- Red River Above Lake Texoma (0204)
- Moss Lake (0204B)
- Farmer's Creek Reservoir (0210)

Red River Basin
Upper Reach I



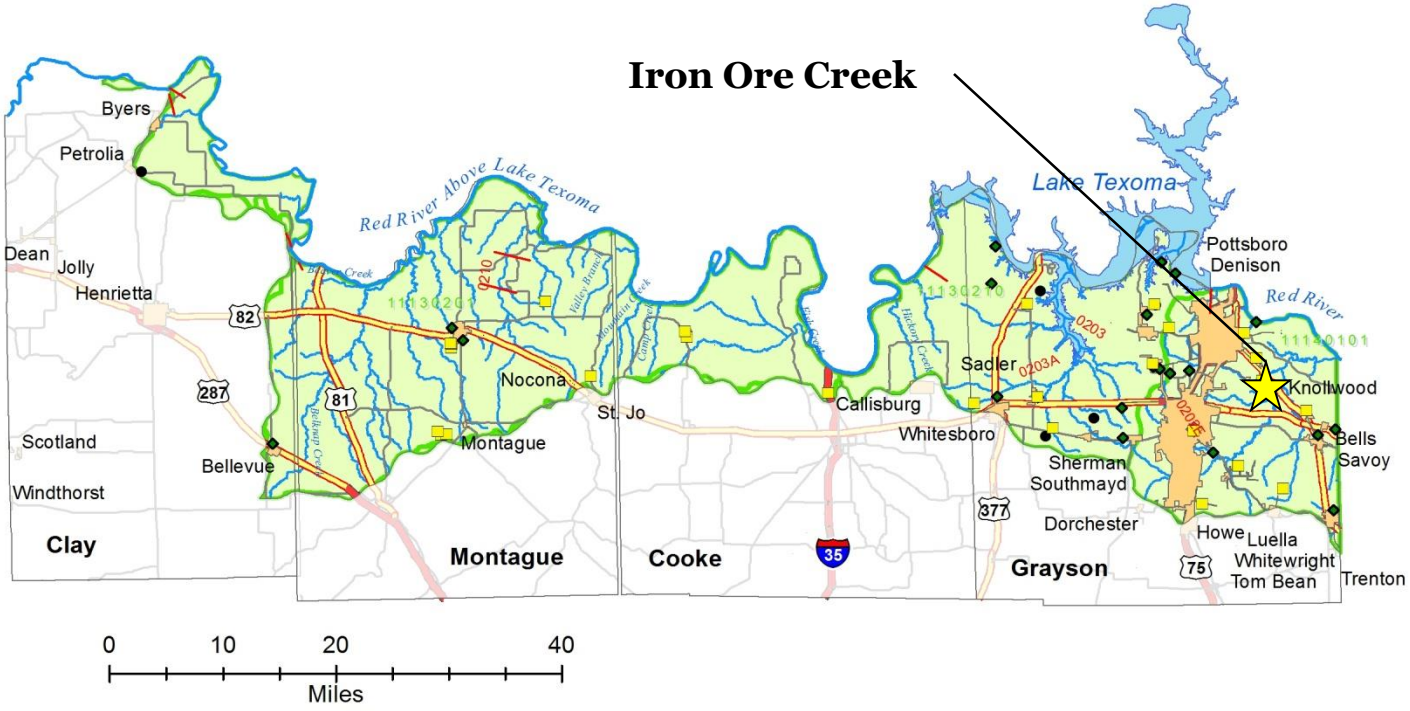
Legend

- MSW / Landfill
- Wastewater Outfall
- CAFO
- Superfund Site
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Upper Reach I

Red River Basin – Reach I Upper

- Post Oak Creek (0202E)
- Choctaw Creek (0202F)
- Sand Creek (0202J)
- Iron Ore Creek (0202K)
  - Bacteria impairment
  - No concerns
  - RUAA has been completed and submitted to TCEQ for review
- Lake Texoma (0203)
- Big Mineral Creek (0203A)
- Red River Above Lake Texoma (0204)
- Moss Lake (0204B)
- Farmer's Creek Reservoir (0210)

Red River Basin
Upper Reach I



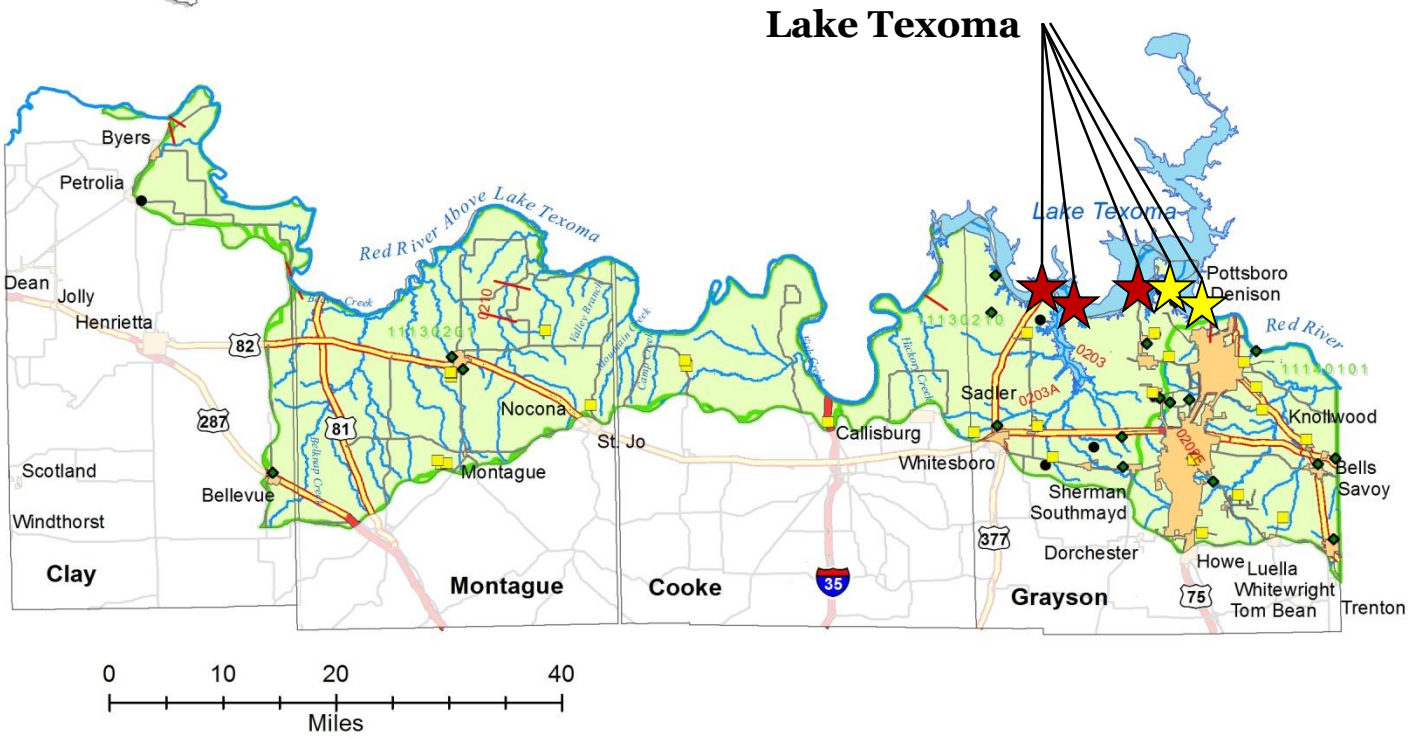
Legend

- MSW / Landfill
- Wastewater Outfall
- CAFO
- Superfund Site
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Upper Reach I

Red River Basin – Reach I Upper

- Post Oak Creek (0202E)
- Choctaw Creek (0202F)
- Sand Creek (0202J)
- Iron Ore Creek (0202K)
- Lake Texoma (0203)
  - No impairments
  - Chlorophyll-*a* and harmful algal bloom
- Big Mineral Creek (0203A)
- Red River Above Lake Texoma (0204)
- Moss Lake (0204B)
- Farmer's Creek Reservoir (0210)

Red River Basin
Upper Reach I



N
W E
S

Legend

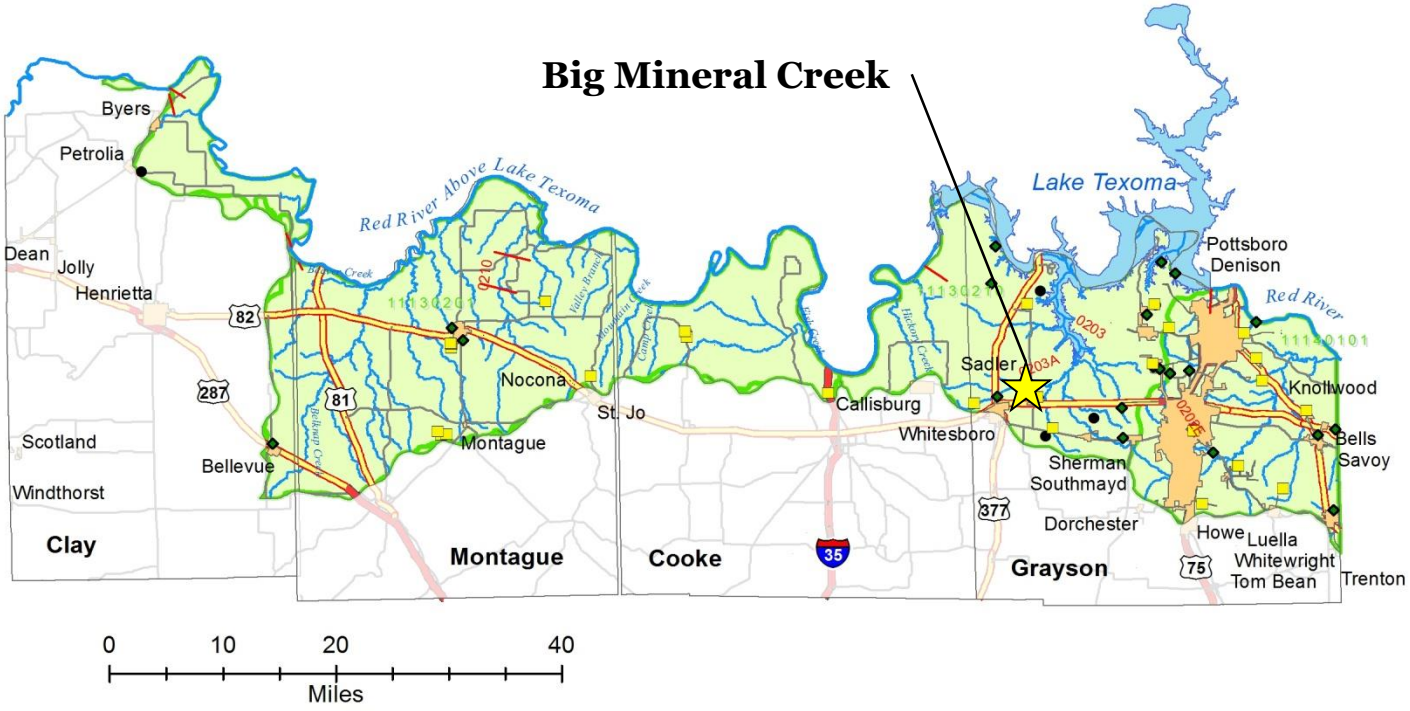
- MSW / Landfill
- Wastewater Outfall
- CAFO
- Superfund Site
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Upper Reach I

Zebra Mussel Warning at US 377 Boat Ramp

Red River Basin – Reach I Upper

- Post Oak Creek (0202E)
- Choctaw Creek (0202F)
- Sand Creek (0202J)
- Iron Ore Creek (0202K)
- Lake Texoma (0203)
- Big Mineral Creek (0203A)
  - No impairments
  - Nitrate and total phosphorus concerns
- Red River Above Lake Texoma (0204)
- Moss Lake (0204B)
- Farmer's Creek Reservoir (0210)

Red River Basin
Upper Reach I



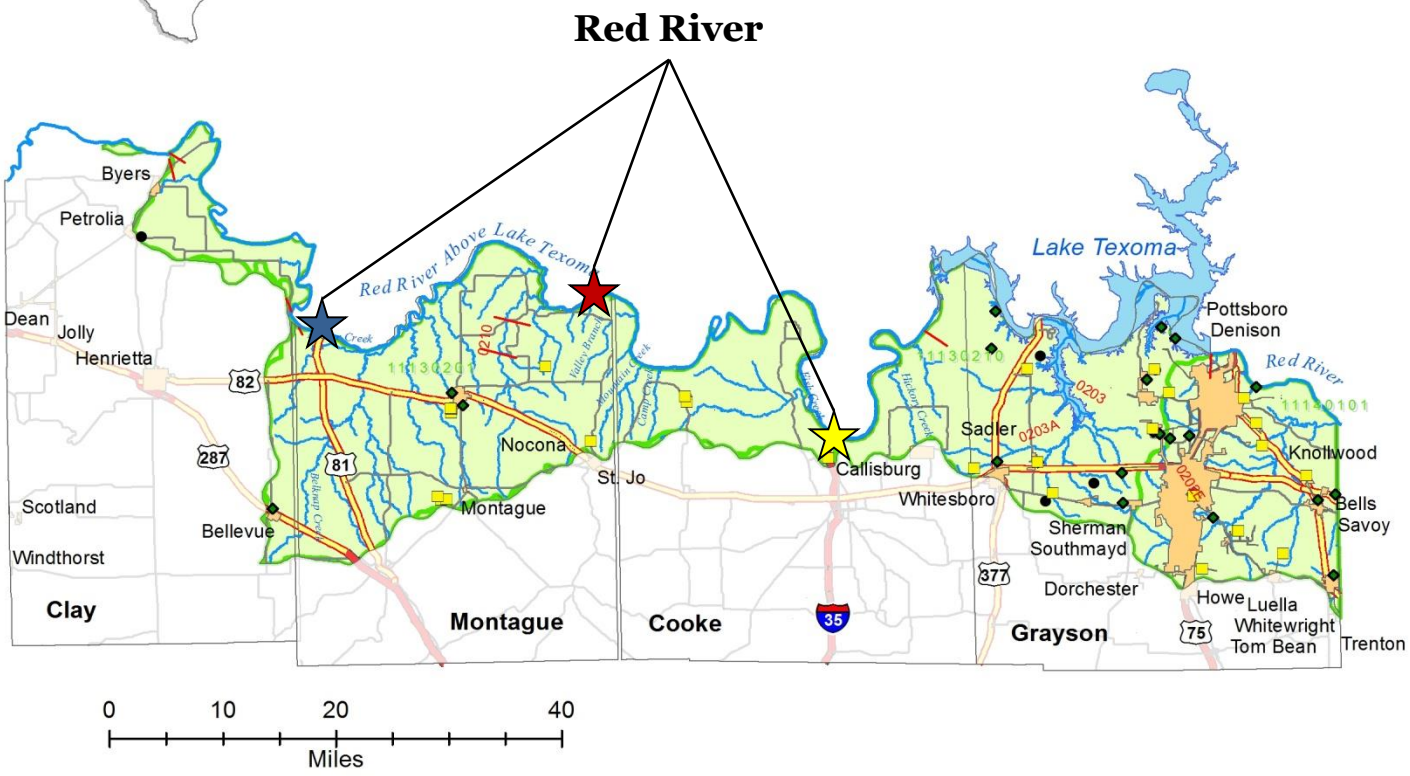
Legend

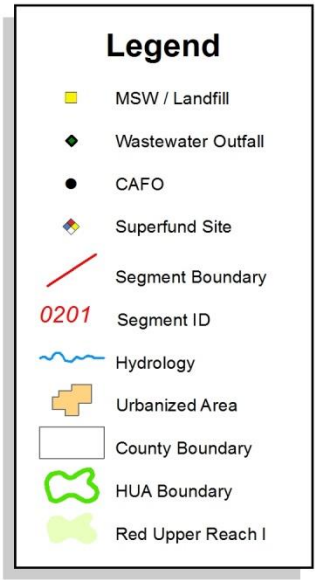
- MSW / Landfill
- Wastewater Outfall
- CAFO
- Superfund Site
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Upper Reach I

Red River Basin – Reach I Upper

- Post Oak Creek (0202E)
- Choctaw Creek (0202F)
- Sand Creek (0202J)
- Iron Ore Creek (0202K)
- Lake Texoma (0203)
- Big Mineral Creek (0203A)
- Red River Above Lake Texoma (0204)
  - No impairments
  - Chlorophyll-*a* concern
- Moss Lake (0204B)
- Farmer's Creek Reservoir (0210)

Red River Basin
Upper Reach I

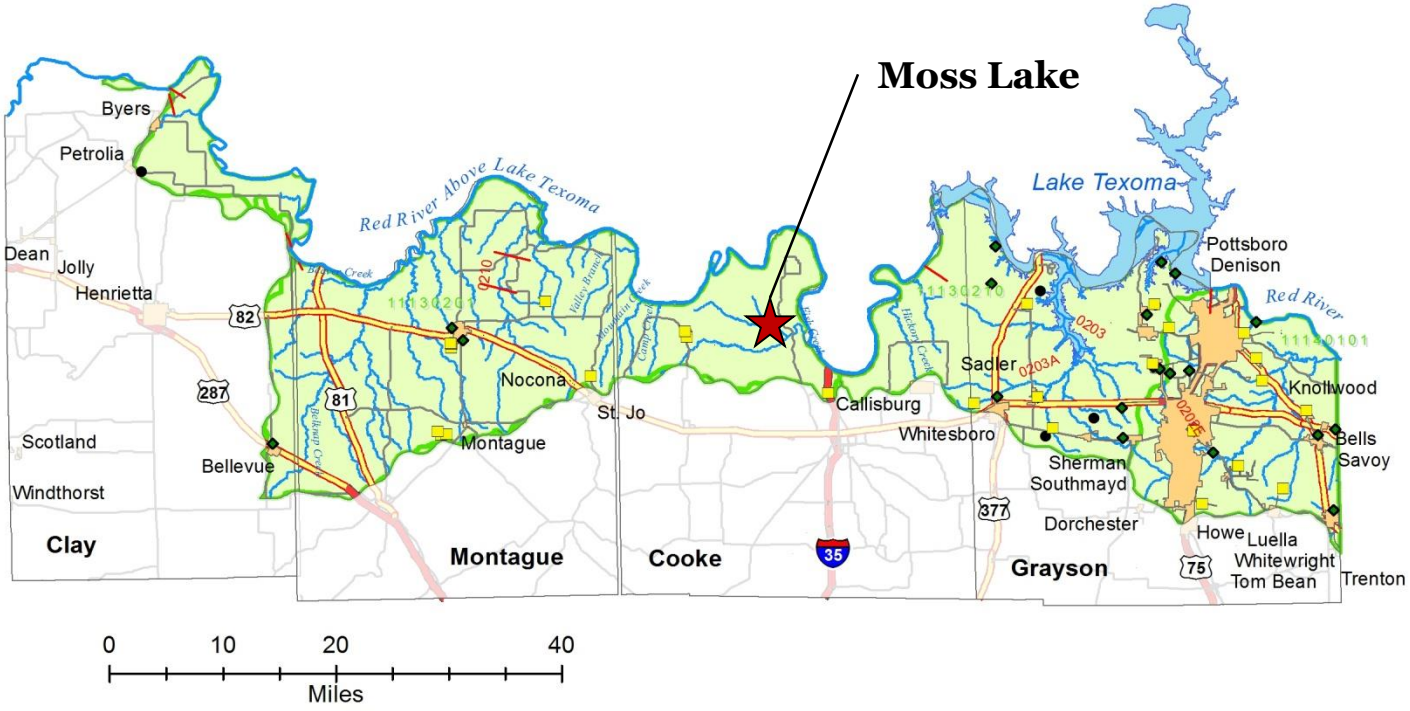


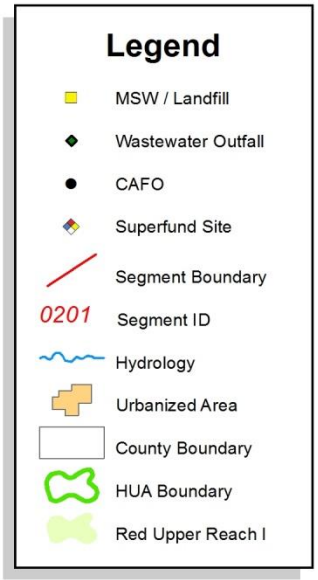


Red River Basin – Reach I Upper

- Post Oak Creek (0202E)
- Choctaw Creek (0202F)
- Sand Creek (0202J)
- Iron Ore Creek (0202K)
- Lake Texoma (0203)
- Big Mineral Creek (0203A)
- Red River Above Lake Texoma (0204)
- Moss Lake (0204B)
  - No impairments or concerns
- Farmer's Creek Reservoir (0210)

Red River Basin
Upper Reach I



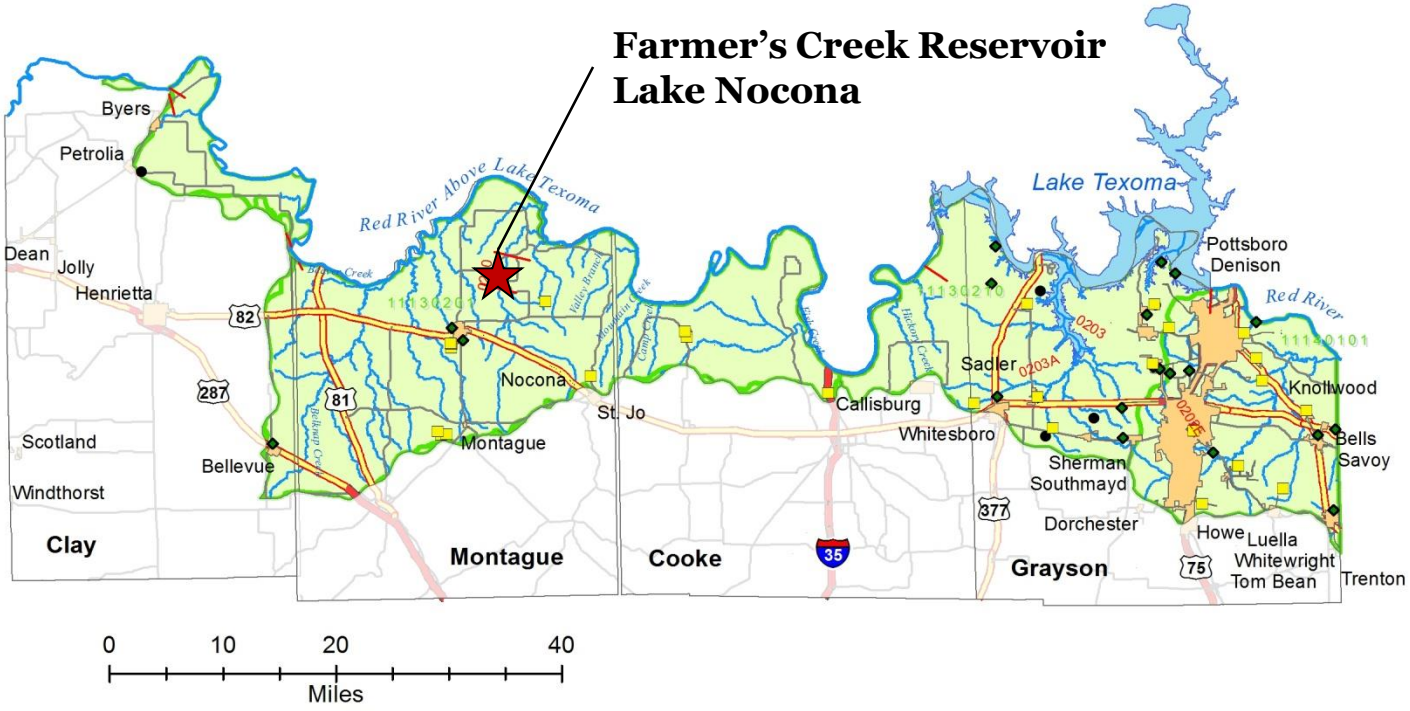


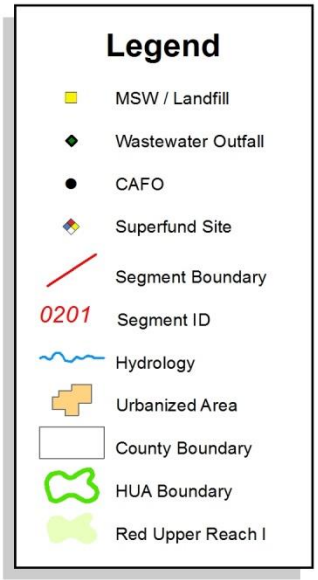
Moss Lake – June 8, 2017

Red River Basin – Reach I Upper

- Post Oak Creek (0202E)
- Choctaw Creek (0202F)
- Sand Creek (0202J)
- Iron Ore Creek (0202K)
- Lake Texoma (0203)
- Big Mineral Creek (0203A)
- Red River Above Lake Texoma (0204)
- Moss Lake (0204B)
- Farmer's Creek Reservoir (0210)
  - No impairments or concerns

Red River Basin
Upper Reach I



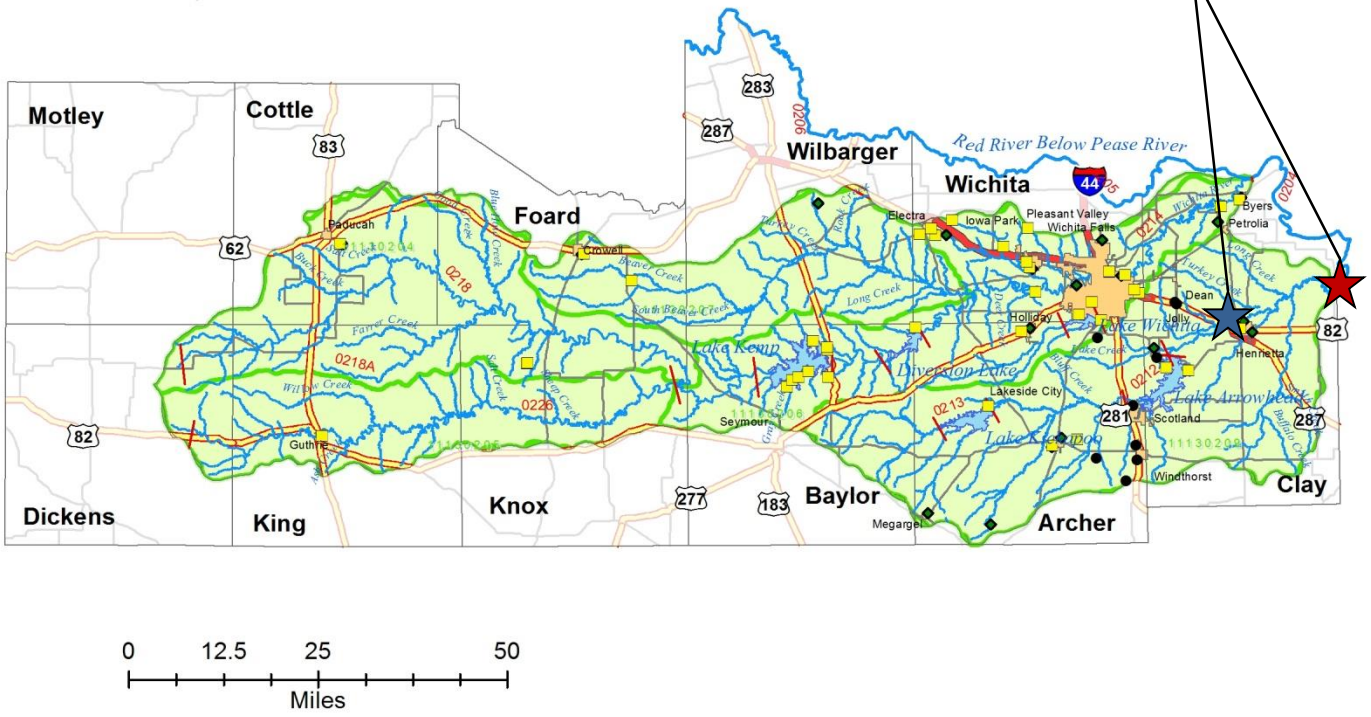


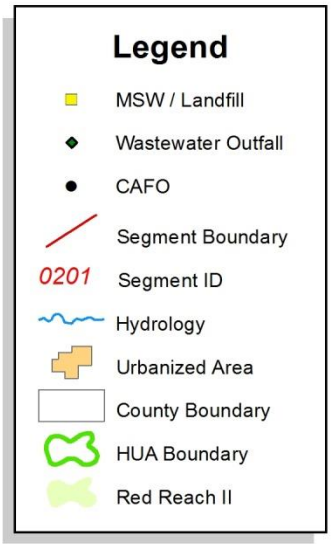
Farmer's Creek Reservoir – March 9, 2017

Red River Basin – Reach II

- Little Wichita River (0211)
  - Chloride, sulfate, TDS and depressed DO impairments
  - Bacteria and chlorophyll-*a* concerns
- East Fork Little Wichita River (0211A)
- Lake Arrowhead (0212)
- Little Wichita River Above Lake Arrowhead (0212A)
- Lake Kickapoo (0213)
- Wichita River Below Lake Diversion Dam (0214)
- Beaver Creek (0214A)
- Buffalo Creek (0214B)
- Holliday Creek (0214C)
- Gordon Lake (0214D)

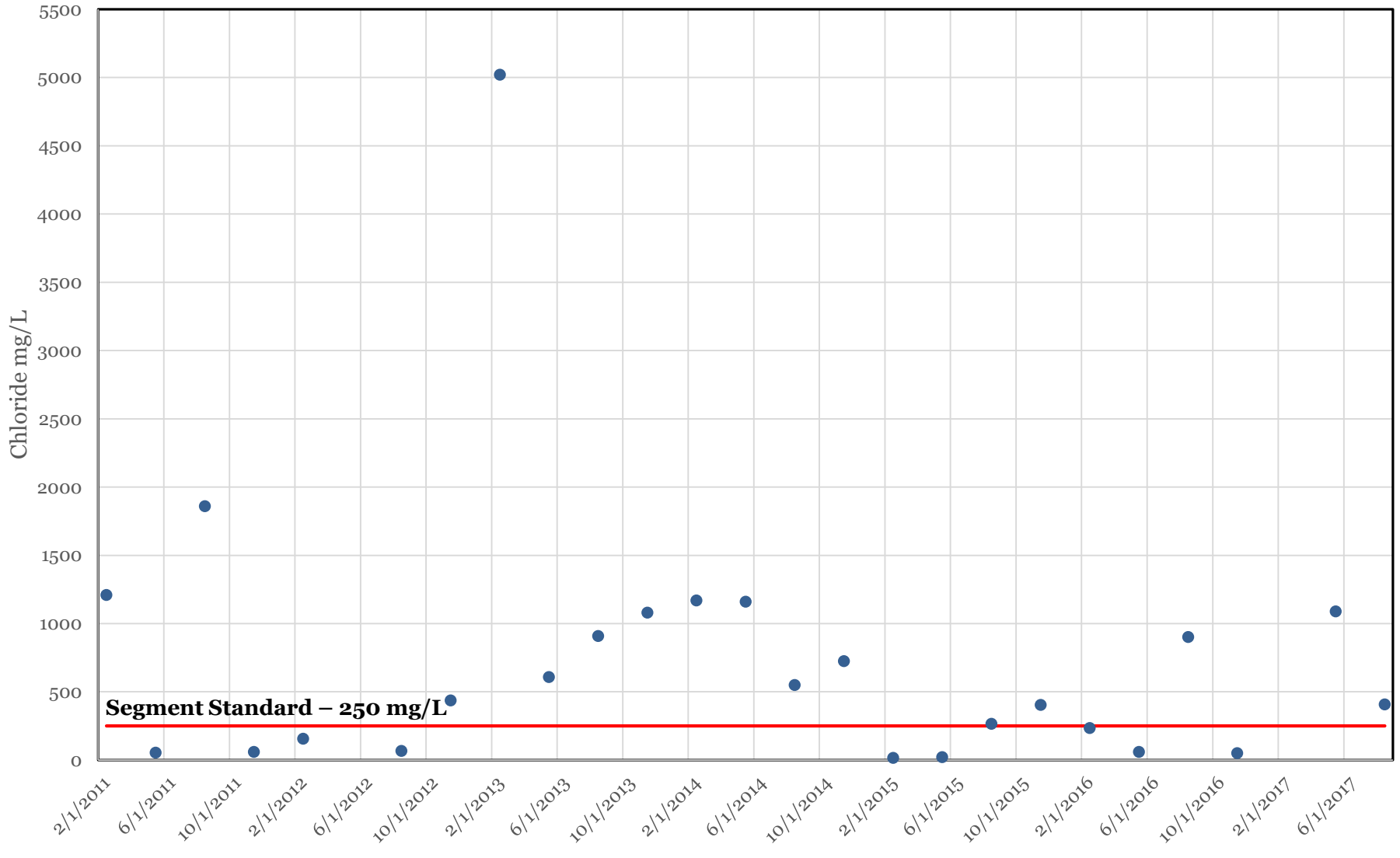
Red River Basin
Reach II





Little Wichita River at FM 2332 – May 8, 2017

Little Wichita River
Segment 0211_01
Chloride

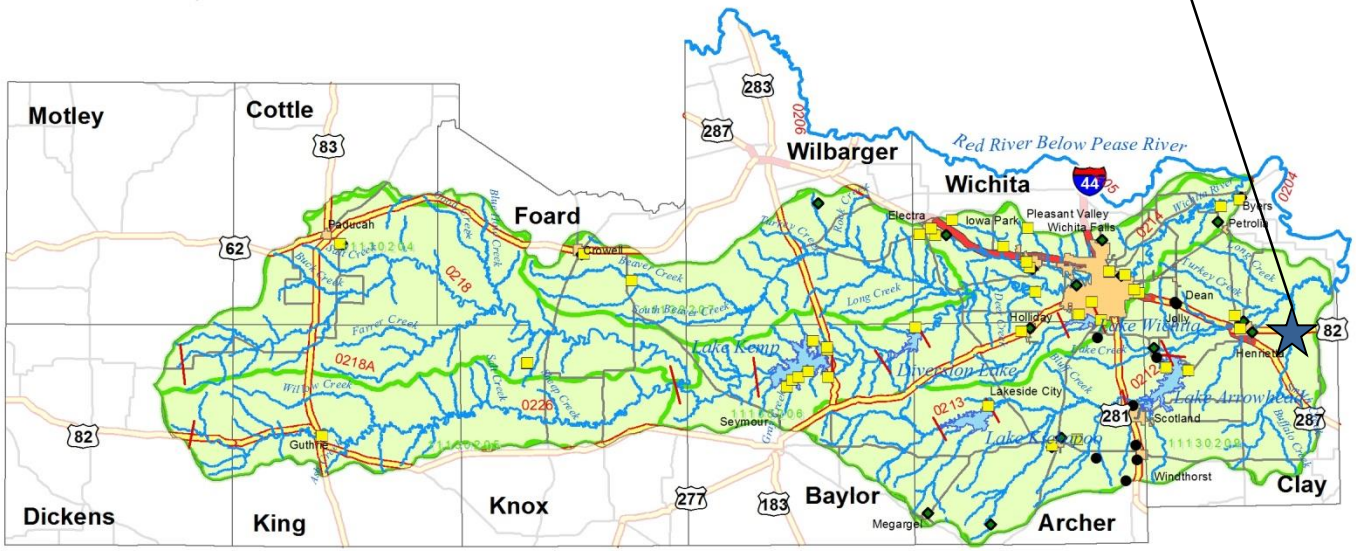


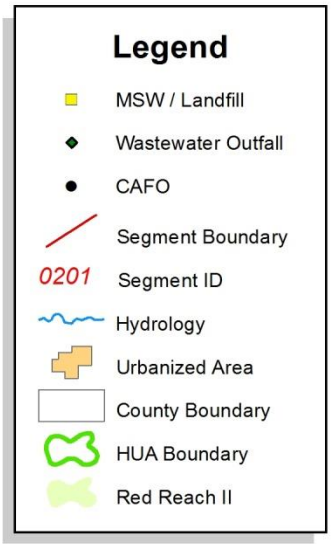
Red River Basin – Reach II

- Little Wichita River (0211)
- East Fork Little Wichita River (0211A)
  - No impairments or concerns
- Lake Arrowhead (0212)
- Little Wichita River Above Lake Arrowhead (0212A)
- Lake Kickapoo (0213)
- Wichita River Below Lake Diversion Dam (0214)
- Beaver Creek (0214A)
- Buffalo Creek (0214B)
- Holliday Creek (0214C)
- Gordon Lake (0214D)

Red River Basin
Reach II

East Fork of the Little Wichita River

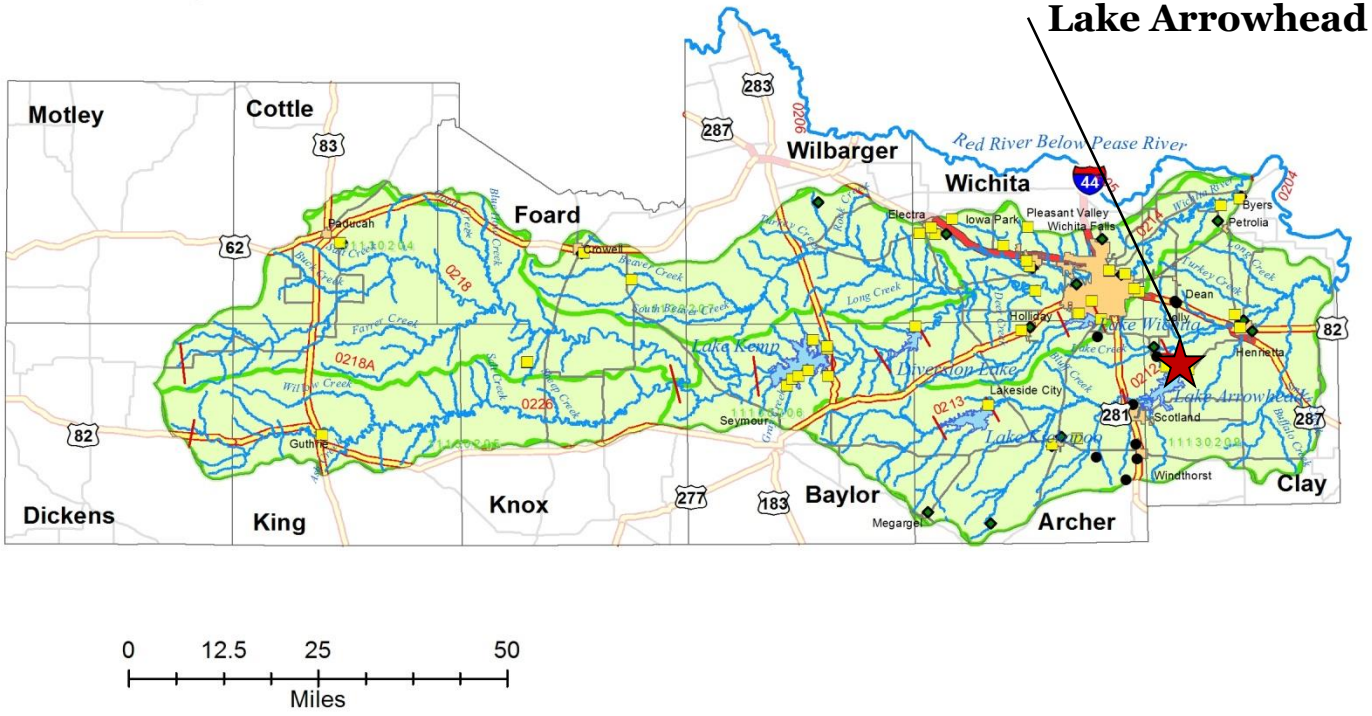




Red River Basin – Reach II

- Little Wichita River (0211)
- East Fork Little Wichita River (0211A)
- Lake Arrowhead (0212)
  - No impairments or concerns
- Little Wichita River Above Lake Arrowhead (0212A)
- Lake Kickapoo (0213)
- Wichita River Below Lake Diversion Dam (0214)
- Beaver Creek (0214A)
- Buffalo Creek (0214B)
- Holliday Creek (0214C)
- Gordon Lake (0214D)

Red River Basin
Reach II



Legend

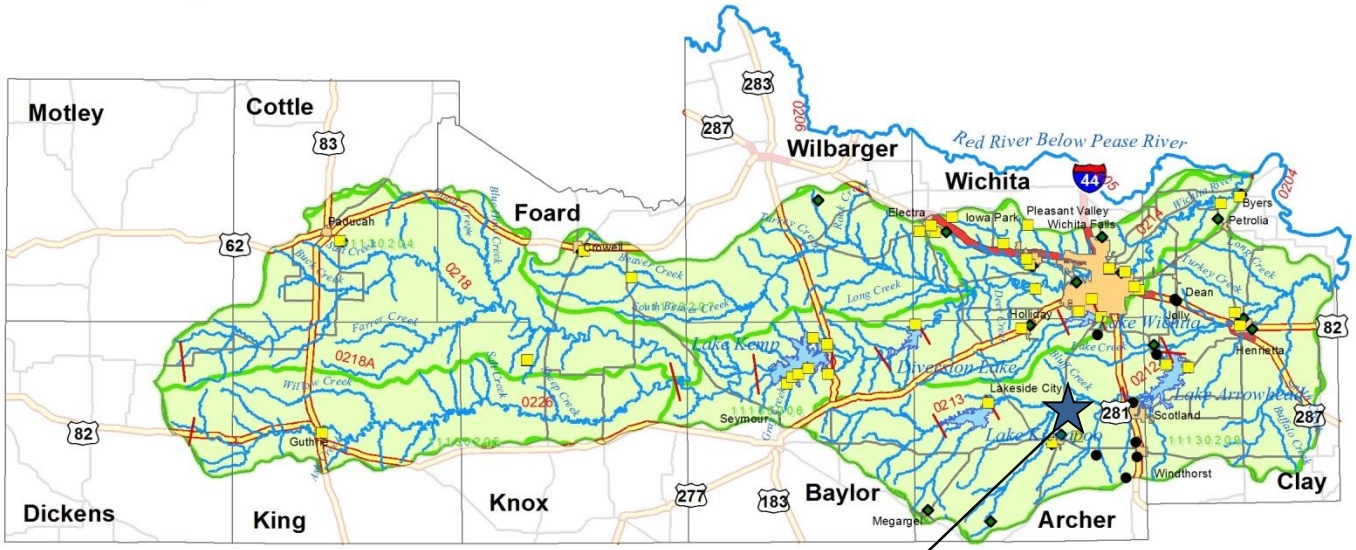
- MSW / Landfill
- Wastewater Outfall
- CAFO
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Reach II

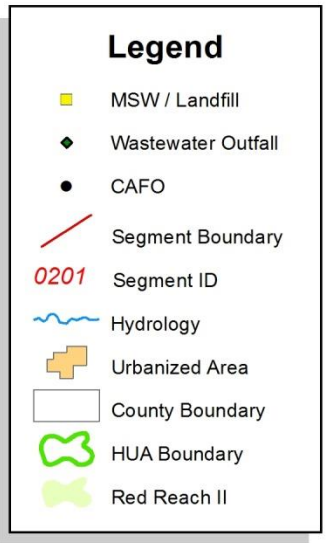
Lake Arrowhead – October 25, 2017

Red River Basin – Reach II

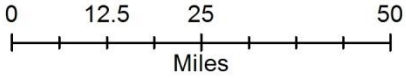
- Little Wichita River (0211)
- East Fork Little Wichita River (0211A)
- Lake Arrowhead (0212)
- Little Wichita River Above Lake Arrowhead (0212A)
  - No impairments or concerns
- Lake Kickapoo (0213)
- Wichita River Below Lake Diversion Dam (0214)
- Beaver Creek (0214A)
- Buffalo Creek (0214B)
- Holliday Creek (0214C)
- Gordon Lake (0214D)

Red River Basin
Reach II





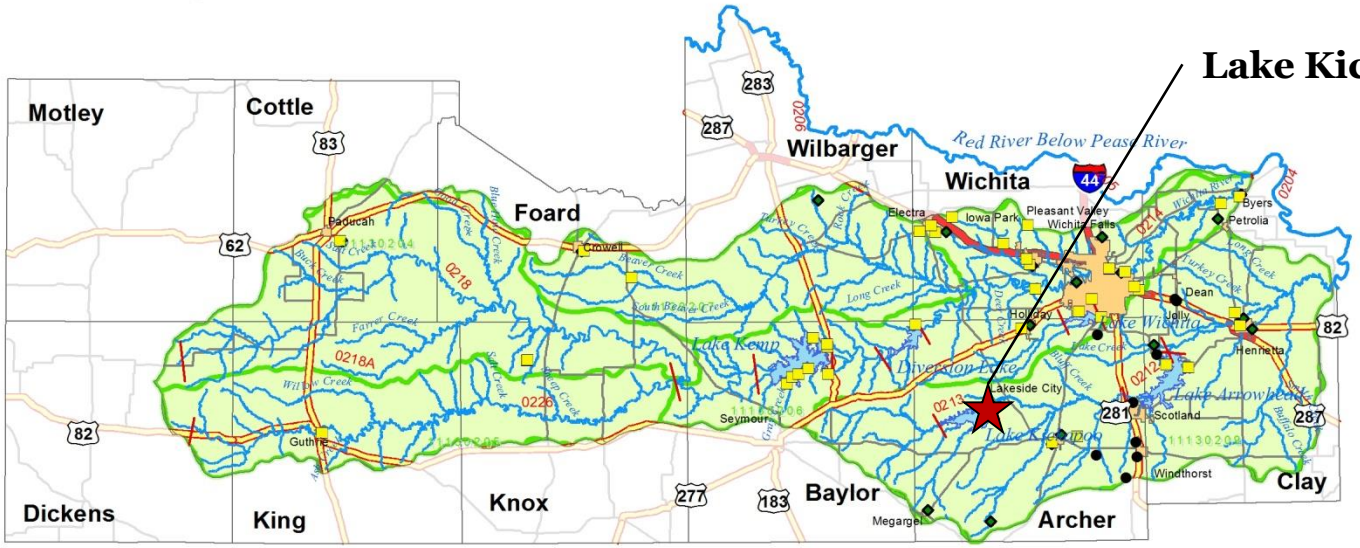
Little Wichita River Above Lake Arrowhead

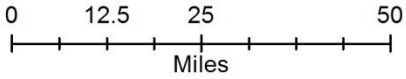


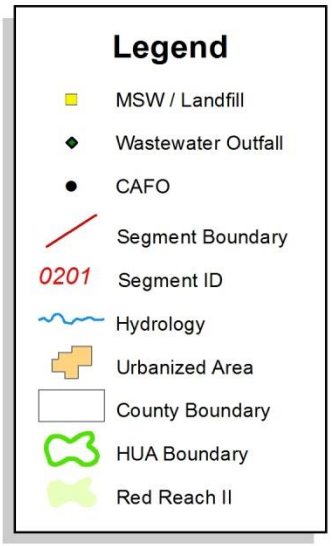
Red River Basin – Reach II

- Little Wichita River (0211)
- East Fork Little Wichita River (0211A)
- Lake Arrowhead (0212)
- Little Wichita River Above Lake Arrowhead (0212A)
- Lake Kickapoo (0213)
  - No impairments or concerns
- Wichita River Below Lake Diversion Dam (0214)
- Beaver Creek (0214A)
- Buffalo Creek (0214B)
- Holliday Creek (0214C)
- Gordon Lake (0214D

Red River Basin
Reach II





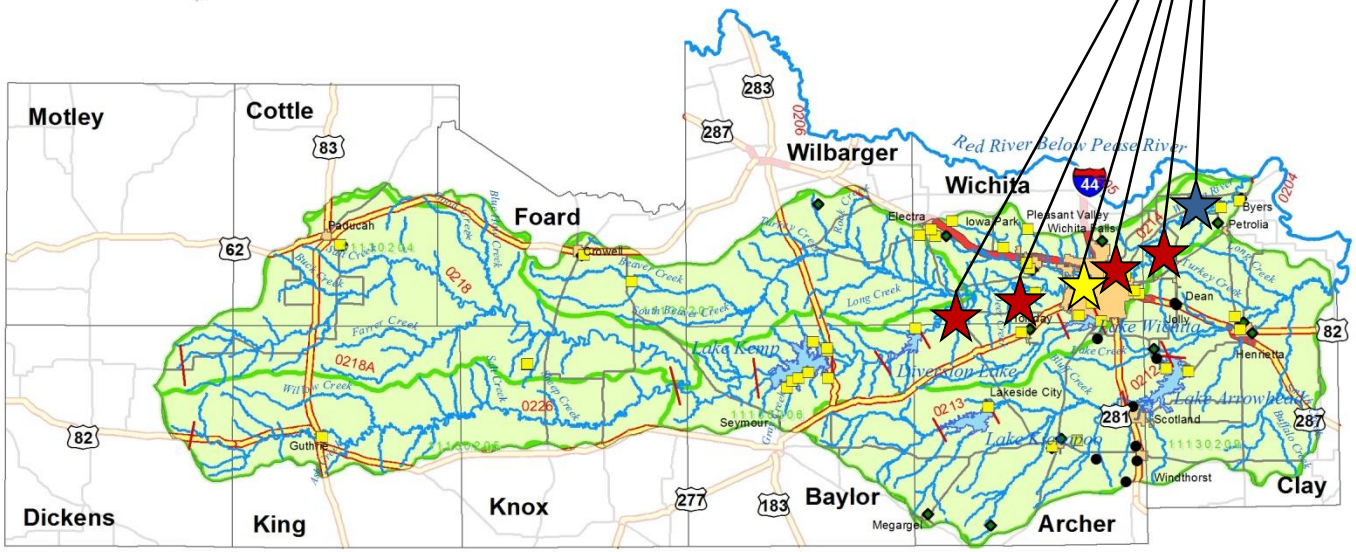


Red River Basin – Reach II

- Little Wichita River (0211)
- East Fork Little Wichita River (0211A)
- Lake Arrowhead (0212)
- Little Wichita River Above Lake Arrowhead (0212A)
- Lake Kickapoo (0213)
- Wichita River Below Diversion Lake Dam (0214)
  - Bacteria impairment
  - Chlorophyll-*a*, nitrate and total phosphorus concerns
  - ALM was conducted with EIH
- Beaver Creek (0214A)
- Buffalo Creek (0214B)
- Holliday Creek (0214C)
- Gordon Lake (0214D)

Red River Basin
Reach II

Wichita River Below Diversion Lake Dam



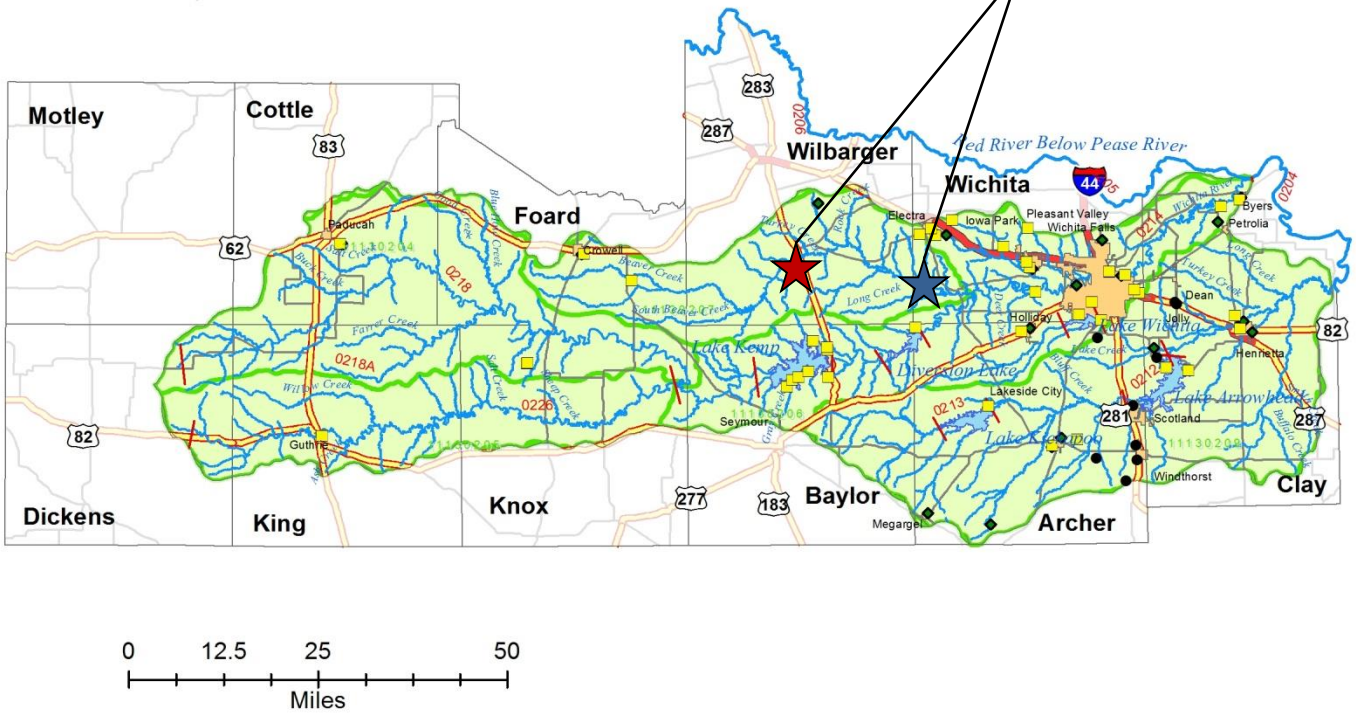
Legend

- MSW / Landfill
- Wastewater Outfall
- CAFO
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Reach II

Red River Basin – Reach II

- Little Wichita River (0211)
- East Fork Little Wichita River (0211A)
- Lake Arrowhead (0212)
- Little Wichita River Above Lake Arrowhead (0212A)
- Lake Kickapoo (0213)
- Wichita River Below Diversion Lake Dam (0214)
- Beaver Creek (0214A)
  - Bacteria impairment
  - Chlorophyll-*a* and depressed DO concerns
  - ALM was conducted with EIH
- Buffalo Creek (0214B)
- Holliday Creek (0214C)
- Gordon Lake (0214D)

Red River Basin
Reach II



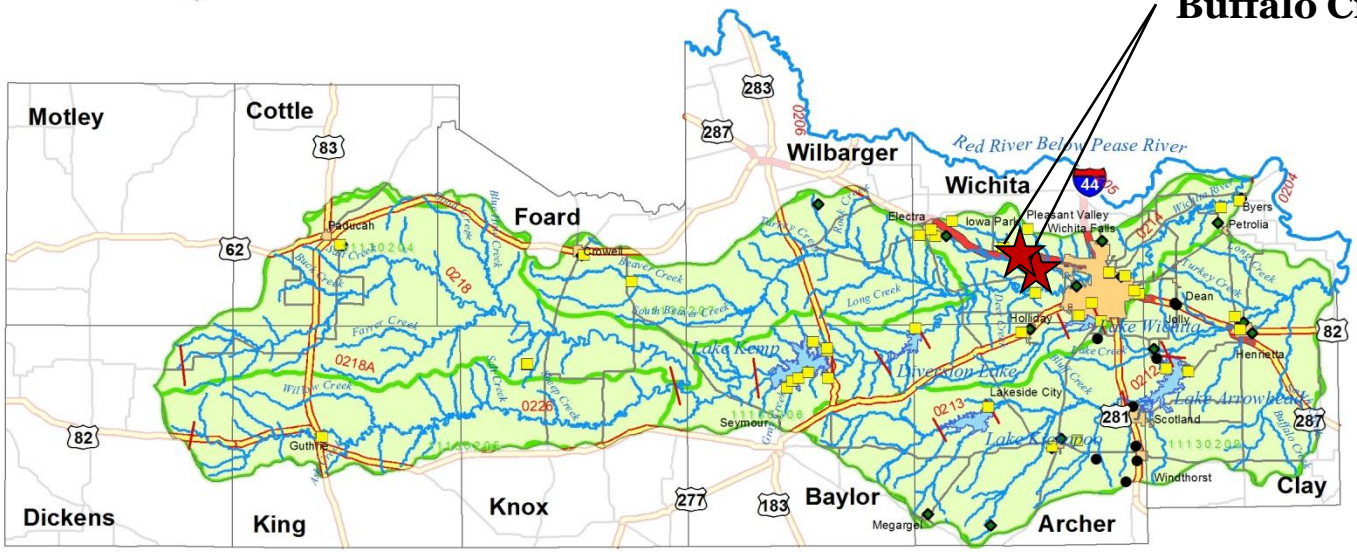
Legend

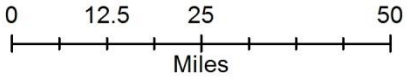
- MSW / Landfill
- Wastewater Outfall
- CAFO
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Reach II

Red River Basin – Reach II

- Little Wichita River (0211)
- East Fork Little Wichita River (0211A)
- Lake Arrowhead (0212)
- Little Wichita River Above Lake Arrowhead (0212A)
- Lake Kickapoo (0213)
- Wichita River Below Diversion Lake Dam (0214)
- Beaver Creek (0214A)
- Buffalo Creek (0214B)
  - Bacteria impairment
  - Ammonia, chlorophyll-*a*, nitrate, and total phosphorus concerns
  - RUAA has been reviewed by TCEQ
  - Recommended change to Secondary 1 in the segment's WQS (2017)
- Holliday Creek (0214C)
- Gordon Lake (0214D)

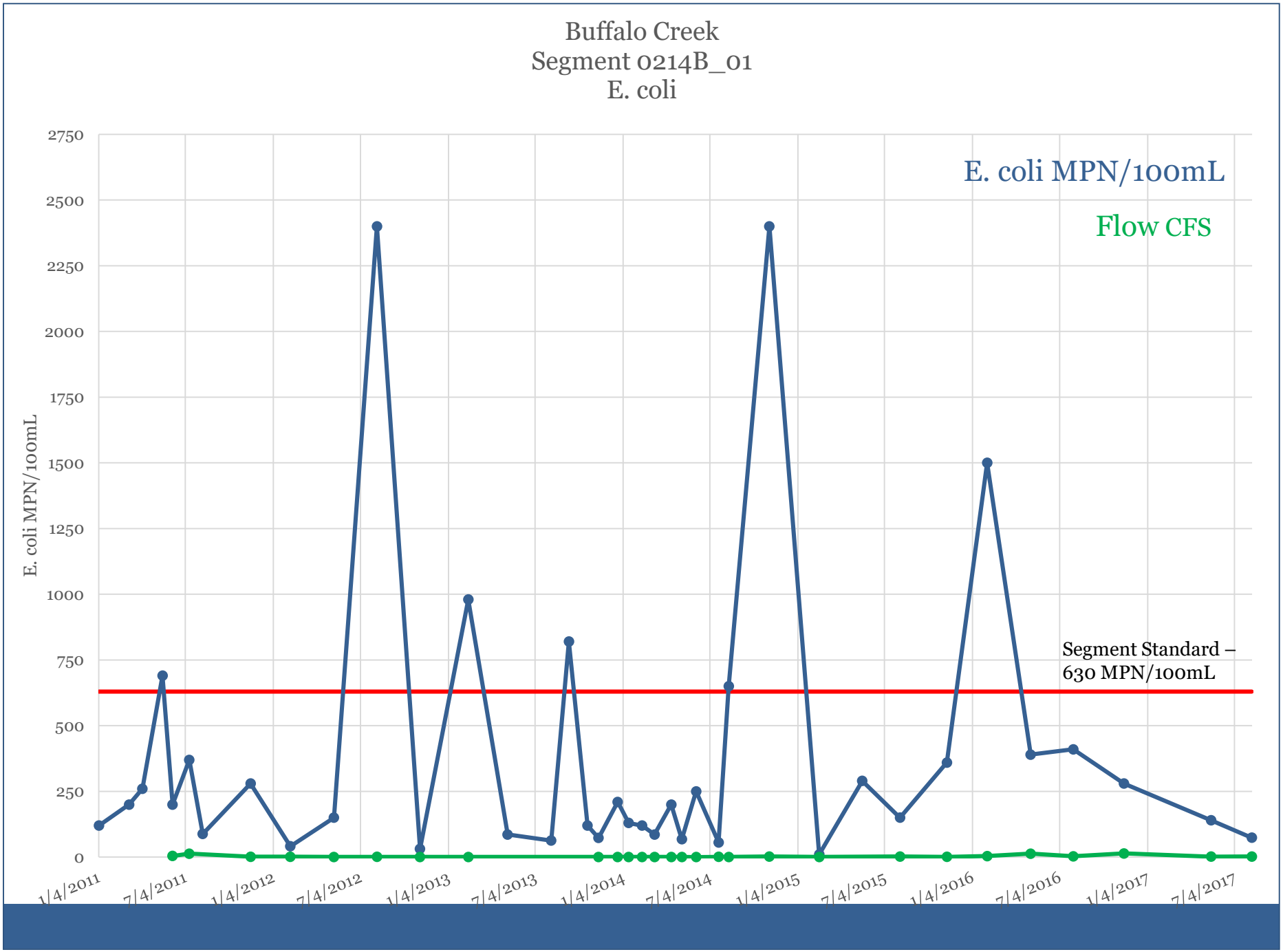
Red River Basin
Reach II





Legend

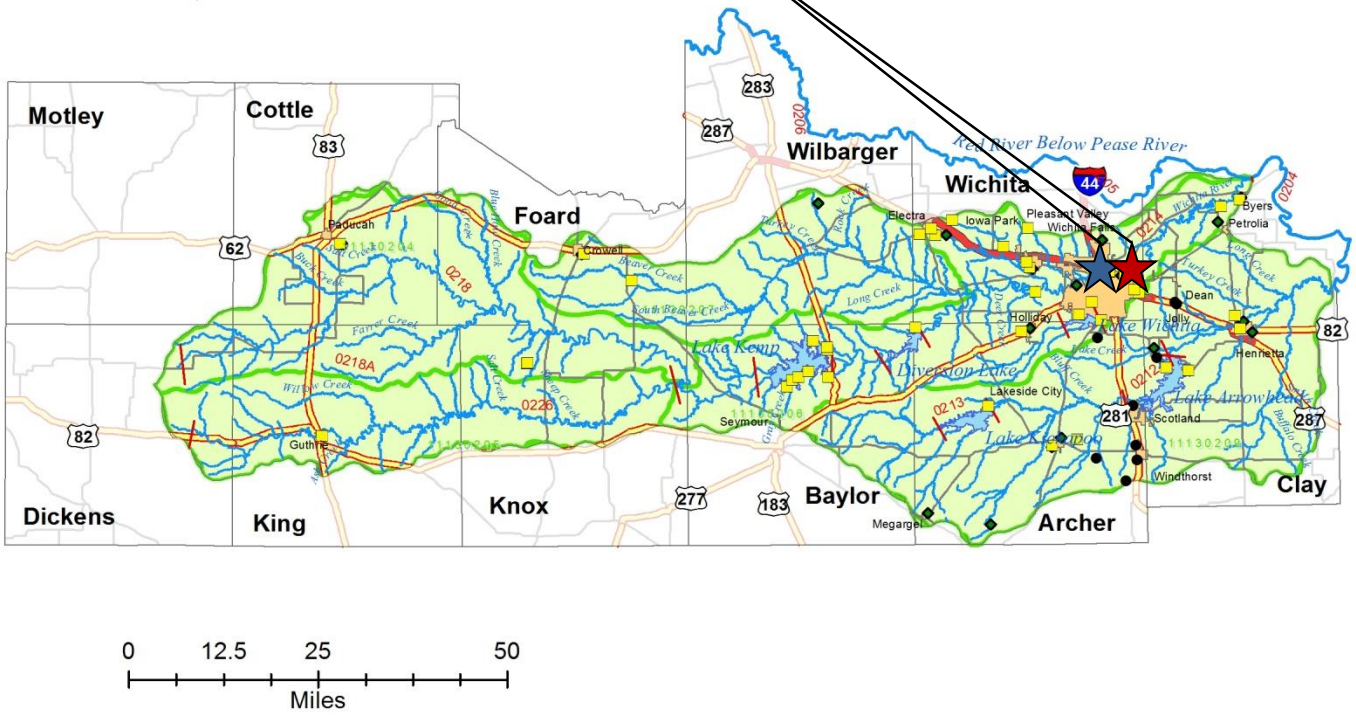
- MSW / Landfill
- Wastewater Outfall
- CAFO
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Reach II

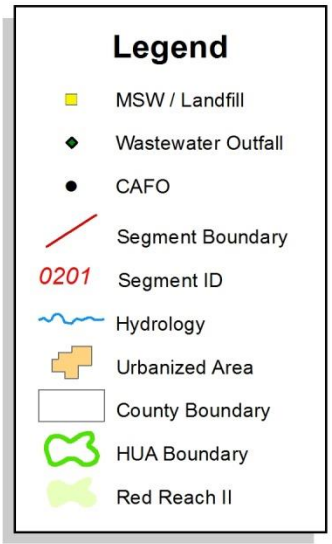

Buffalo Creek
Segment 0214B_01
E. coli
E. coli MPN/100mL
Flow CFS
Segment Standard – 630 MPN/100mL
E. coli MPN/100mL
2750
2500
2250
2000
1750
1500
1250
1000
750
500
250
0
1/4/2011
7/4/2011
1/4/2012
7/4/2012
1/4/2013
7/4/2013
1/4/2014
7/4/2014
1/4/2015
7/4/2015
1/4/2016
7/4/2016
1/4/2017
7/4/2017

Red River Basin – Reach II

- Little Wichita River (0211)
- East Fork Little Wichita River (0211A)
- Lake Arrowhead (0212)
- Little Wichita River Above Lake Arrowhead (0212A)
- Lake Kickapoo (0213)
- Wichita River Below Diversion Lake Dam (0214)
- Beaver Creek (0214A)
- Buffalo Creek (0214B)
- Holliday Creek (0214C)
  - No impairments or concerns
- Gordon Lake (0214D)
  - No impairments or concerns

Red River Basin
Reach II



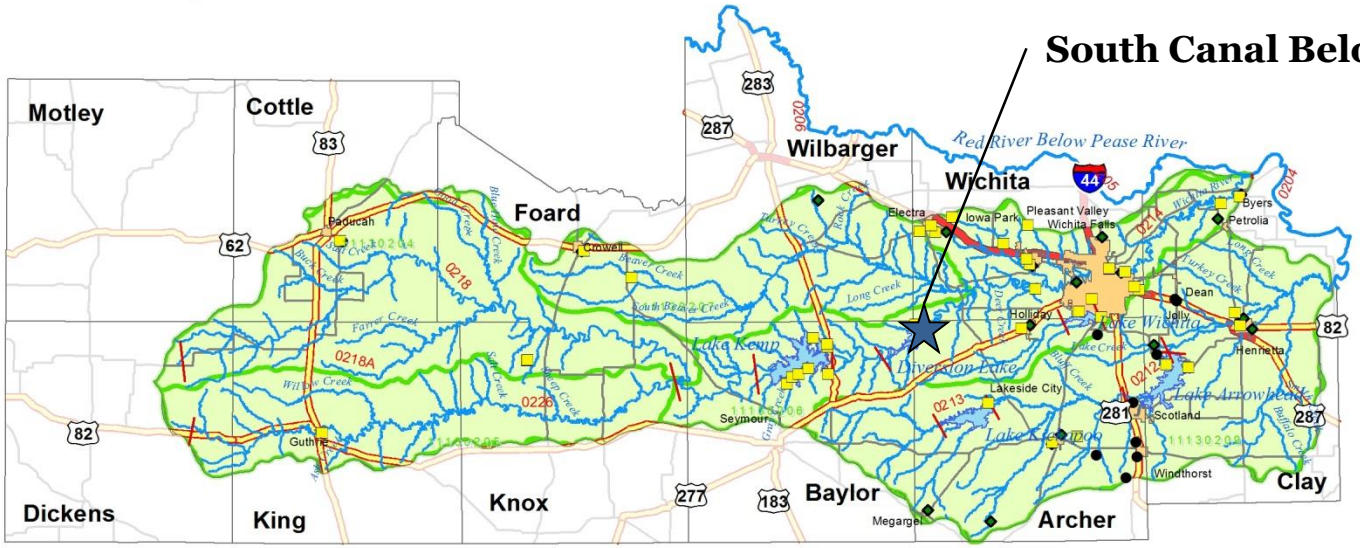


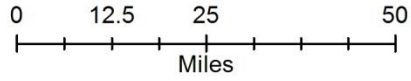
Red River Basin – Reach II

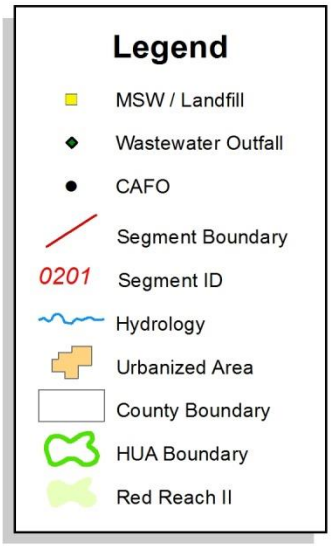
- Wichita Valley Irrigation Project (0214E)
  - No impairments
  - Chlorophyll-*a* concern
- Unnamed Tributary of Buffalo Creek (0214F)
- Diversion Lake (0215)
- Wichita River Below Lake Kemp (0216)
- Lake Kemp (0217)
- Wichita/North Fork Wichita River (0218)
- Middle Fork Wichita River (0218A)
- Lake Wichita (0219)
- Holliday Creek Above Lake Wichita (0219A)
- South Fork Wichita River (0226)

Red River Basin
Reach II

South Canal Below Lake Diversion







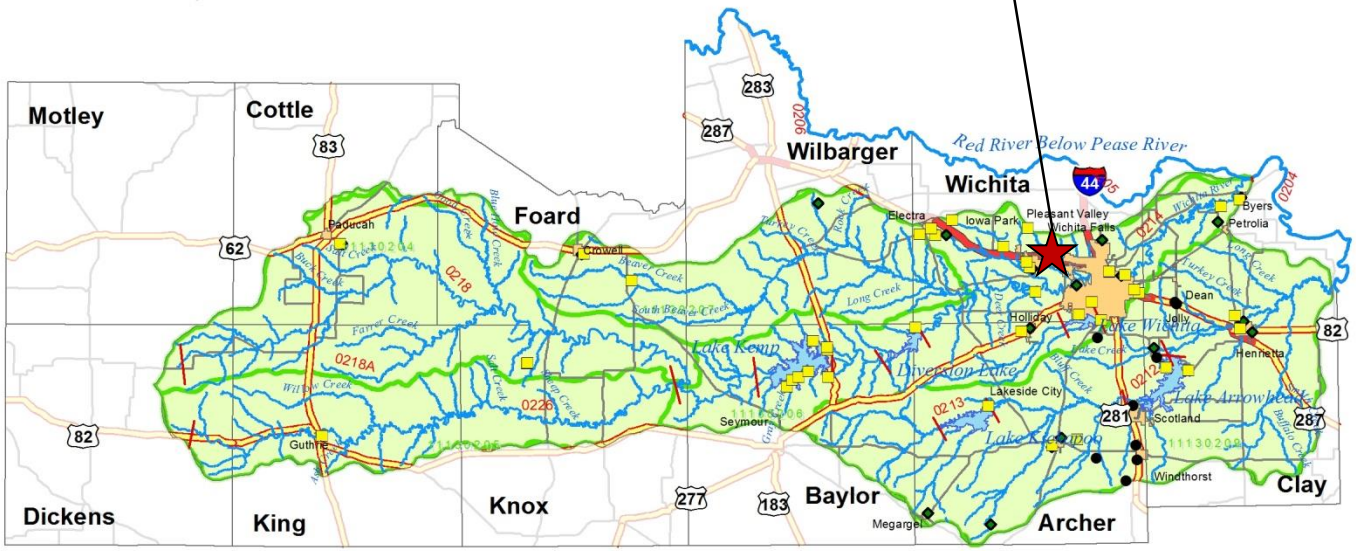
South Canal Below Lake Diversion–November 30, 2017

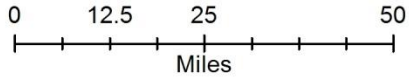
Red River Basin – Reach II

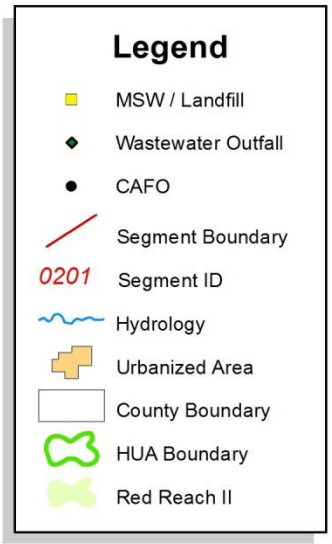
- Wichita Valley Irrigation Project (0214E)
- Unnamed Tributary of Buffalo Creek (0214F)
  - No impairments or concerns
- Diversion Lake (0215)
- Wichita River Below Lake Kemp (0216)
- Lake Kemp (0217)
- Wichita/North Fork Wichita River (0218)
- Middle Fork Wichita River (0218A)
- Lake Wichita (0219)
- Holliday Creek Above Lake Wichita (0219A)
- South Fork Wichita River (0226)

Red River Basin
Reach II

Unnamed Tributary of Buffalo Creek



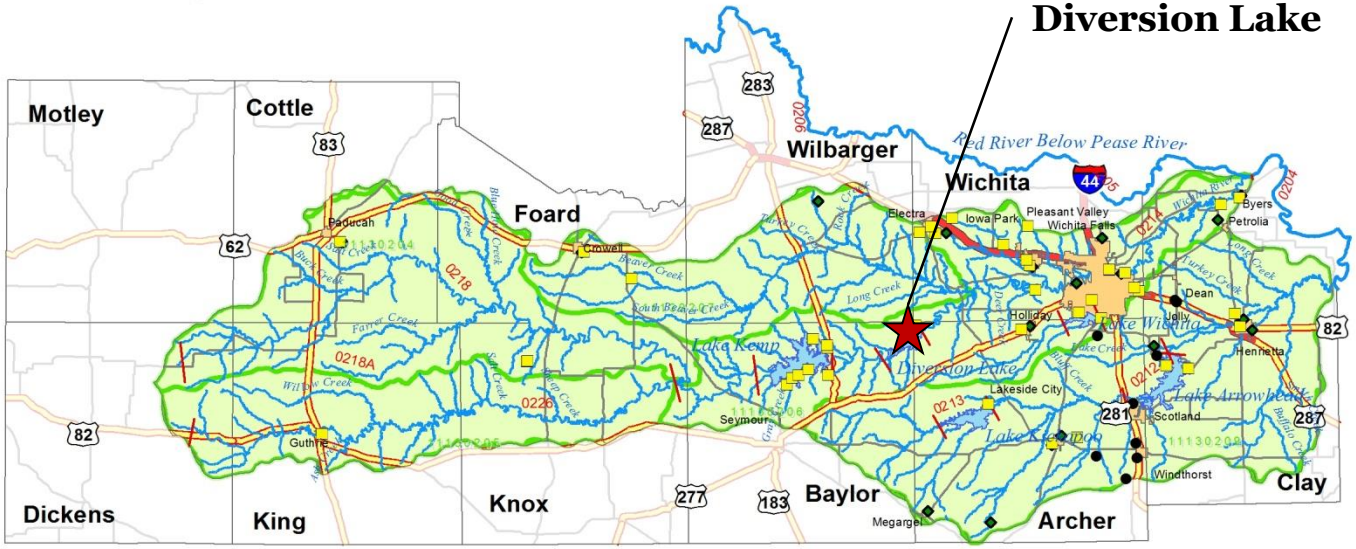


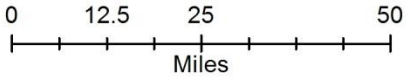


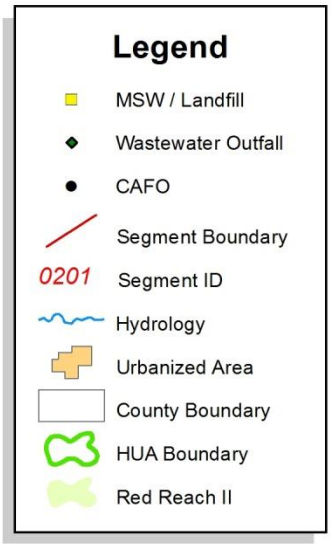
Red River Basin – Reach II

- Wichita Valley Irrigation Project (0214E)
- Unnamed Tributary of Buffalo Creek (0214F)
- Diversion Lake (0215)
  - No impairments
  - Harmful algal bloom concern
- Wichita River Below Lake Kemp (0216)
- Lake Kemp (0217)
- Wichita/North Fork Wichita River (0218)
- Middle Fork Wichita River (0218A)
- Lake Wichita (0219)
- Holliday Creek Above Lake Wichita (0219A)
- South Fork Wichita River (0226)

Red River Basin
Reach II





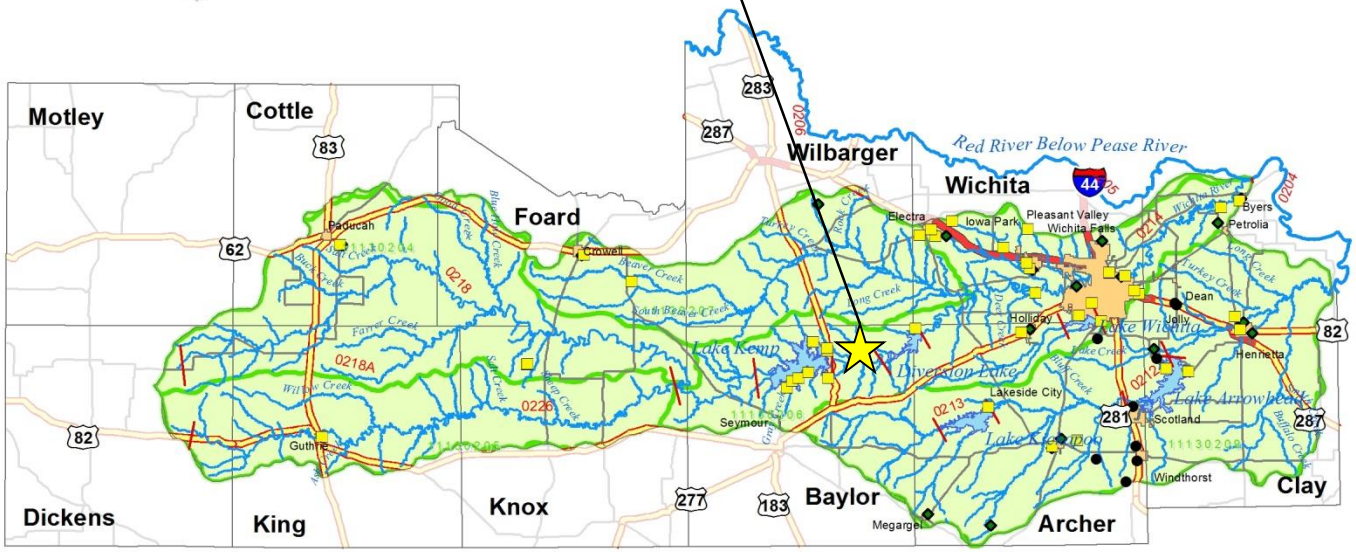


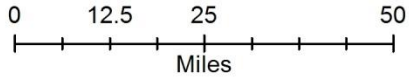
Red River Basin – Reach II

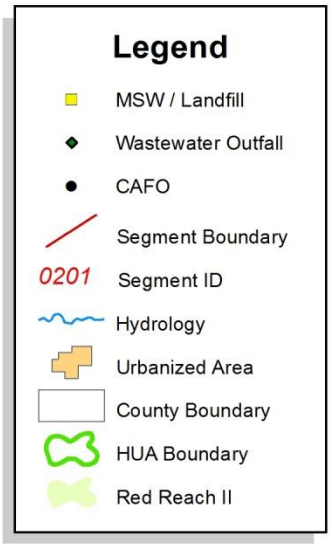
- Wichita Valley Irrigation Project (0214E)
- Unnamed Tributary of Buffalo Creek (0214F)
- Diversion Lake (0215)
- Wichita River Below Lake Kemp (0216)
  - No impairments or concerns
- Lake Kemp (0217)
- Wichita/North Fork Wichita River (0218)
- Middle Fork Wichita River (0218A)
- Lake Wichita (0219)
- Holliday Creek Above Lake Wichita (0219A)
- South Fork Wichita River (0226)

Red River Basin
Reach II

Wichita River Below Lake Kemp





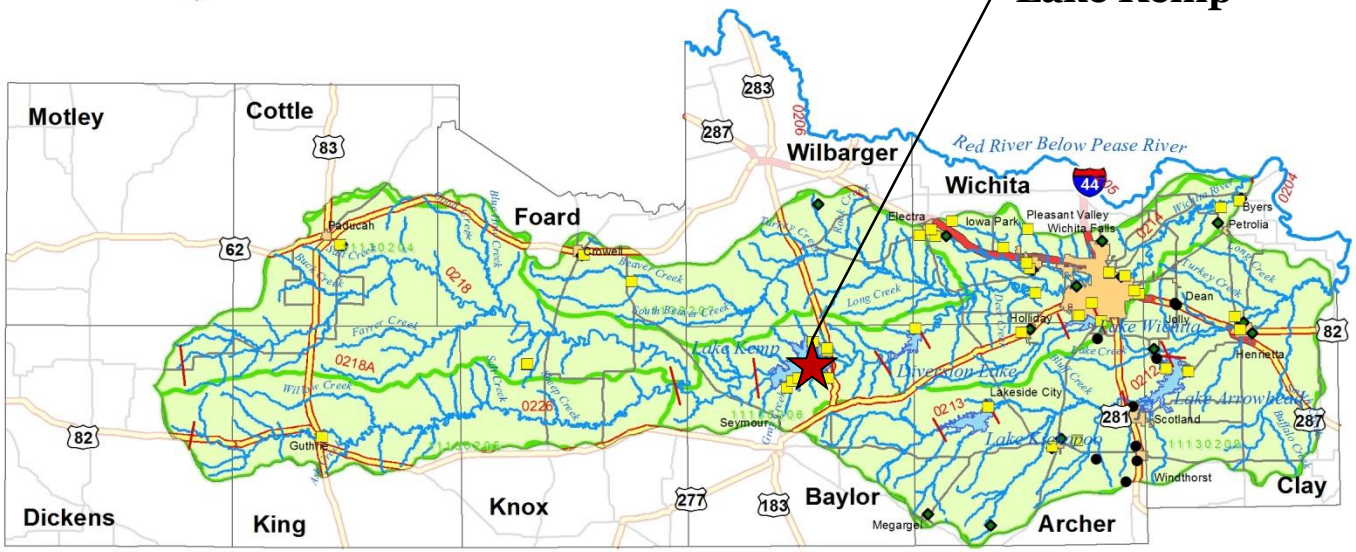


Wichita River at US283–November 27, 2017

Red River Basin – Reach II

- Wichita Valley Irrigation Project (0214E)
- Unnamed Tributary of Buffalo Creek (0214F)
- Diversion Lake (0215)
- Wichita River Below Lake Kemp (0216)
- Lake Kemp (0217)
  - No impairments or concerns
- Wichita/North Fork Wichita River (0218)
- Middle Fork Wichita River (0218A)
- Lake Wichita (0219)
- Holliday Creek Above Lake Wichita (0219A)
- South Fork Wichita River (0226)

Red River Basin
Reach II



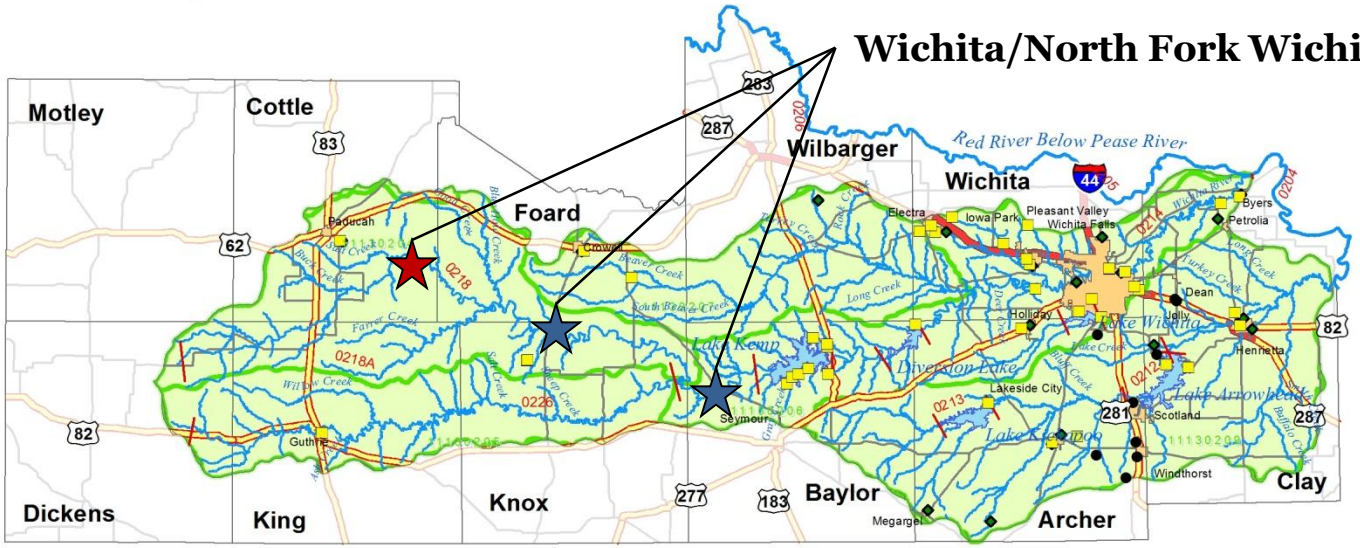
Legend

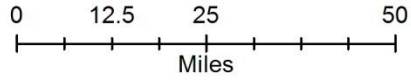
- MSW / Landfill
- Wastewater Outfall
- CAFO
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Reach II

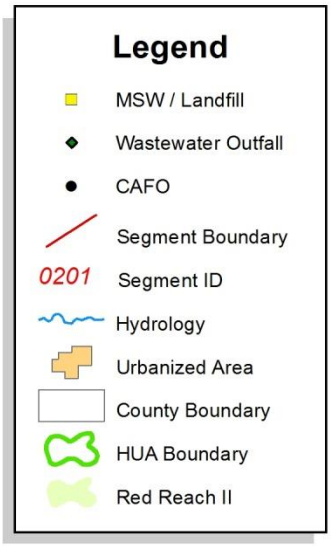
Red River Basin – Reach II

- Wichita Valley Irrigation Project (0214E)
- Unnamed Tributary of Buffalo Creek (0214F)
- Diversion Lake (0215)
- Wichita River Below Lake Kemp (0216)
- Lake Kemp (0217)
- Wichita/North Fork Wichita River (0218)
  - No impairments
  - Bacteria concern
- Middle Fork Wichita River (0218A)
- Lake Wichita (0219)
- Holliday Creek Above Lake Wichita (0219A)
- South Fork Wichita River (0226)

Red River Basin
Reach II







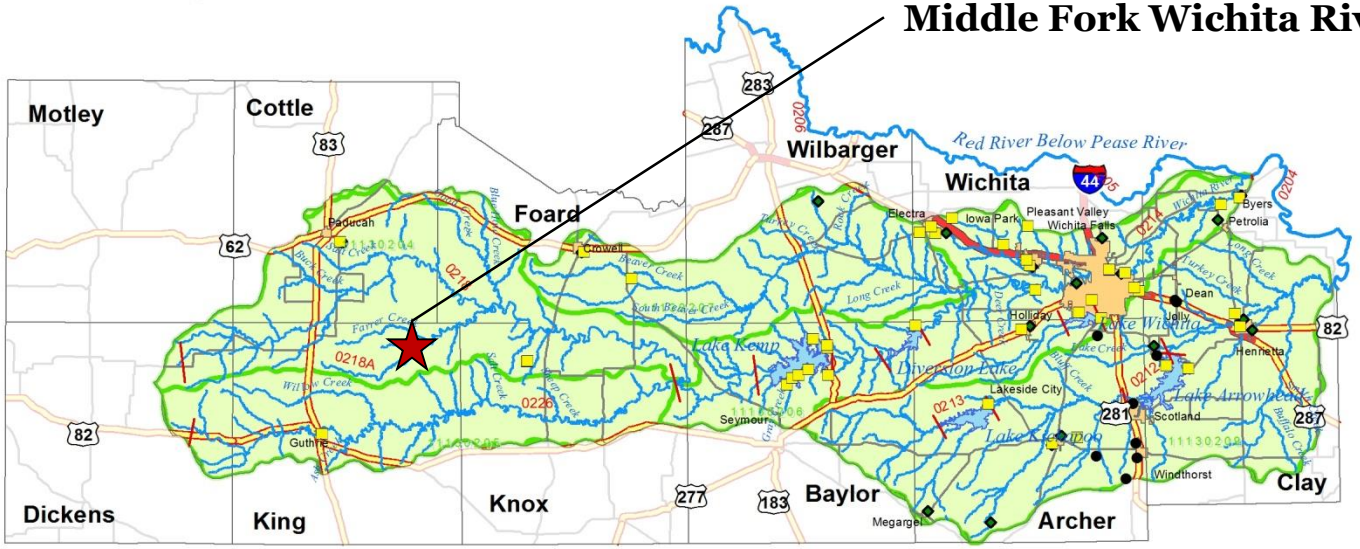
North Wichita River near Paducah – November 30, 2017

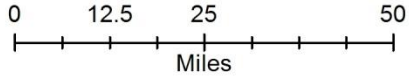
North Wichita River at SH 6 – November 16, 2017

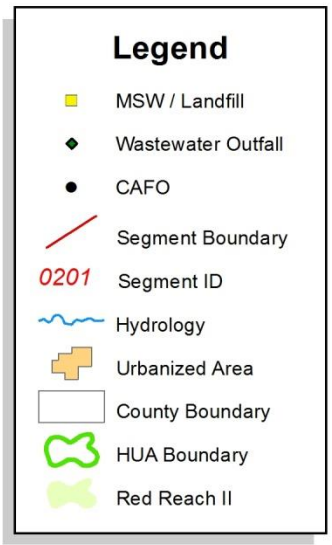
Red River Basin – Reach II

- Wichita Valley Irrigation Project (0214E)
- Unnamed Tributary of Buffalo Creek (0214F)
- Diversion Lake (0215)
- Wichita River Below Lake Kemp (0216)
- Lake Kemp (0217)
- Wichita/North Fork Wichita River (0218)
- Middle Fork Wichita River (0218A)
  - No impairments
  - Selenium in water concern
- Lake Wichita (0219)
- Holliday Creek Above Lake Wichita (0219A)
- South Fork Wichita River (0226)

Red River Basin
Reach II





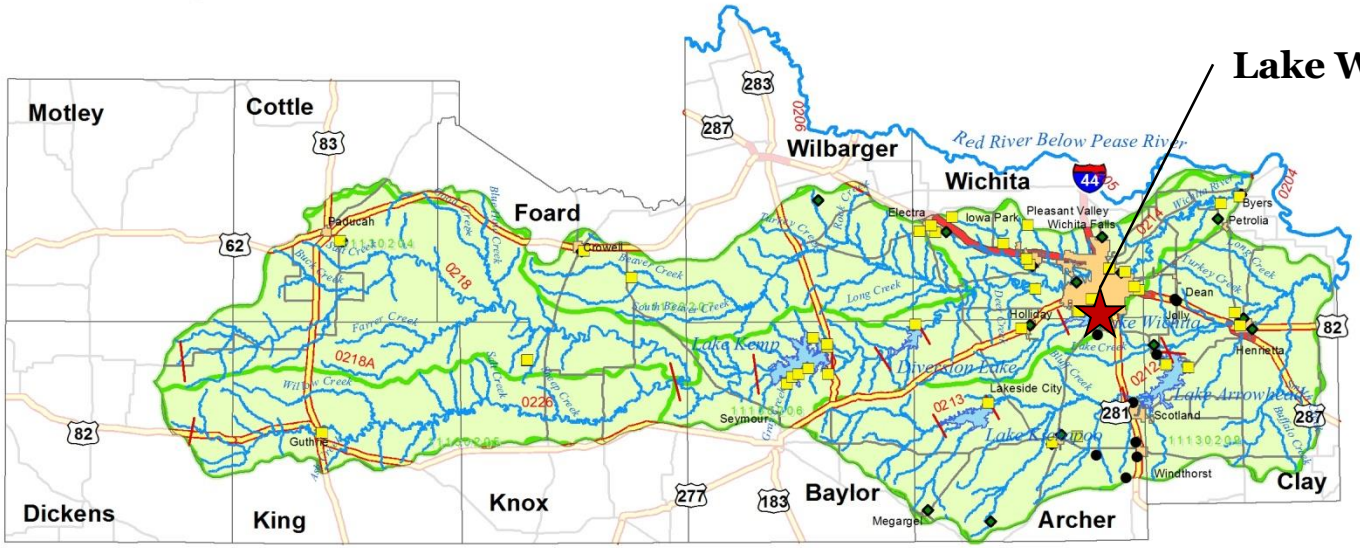


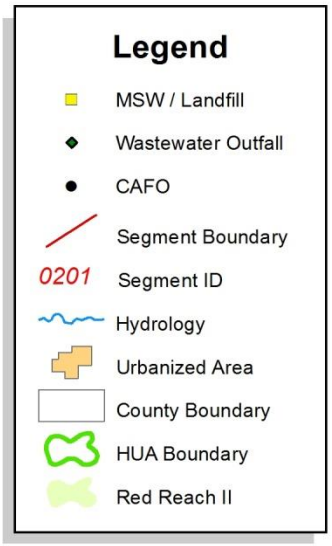
Middle Fork Wichita River NE of Guthrie – November 14, 2017

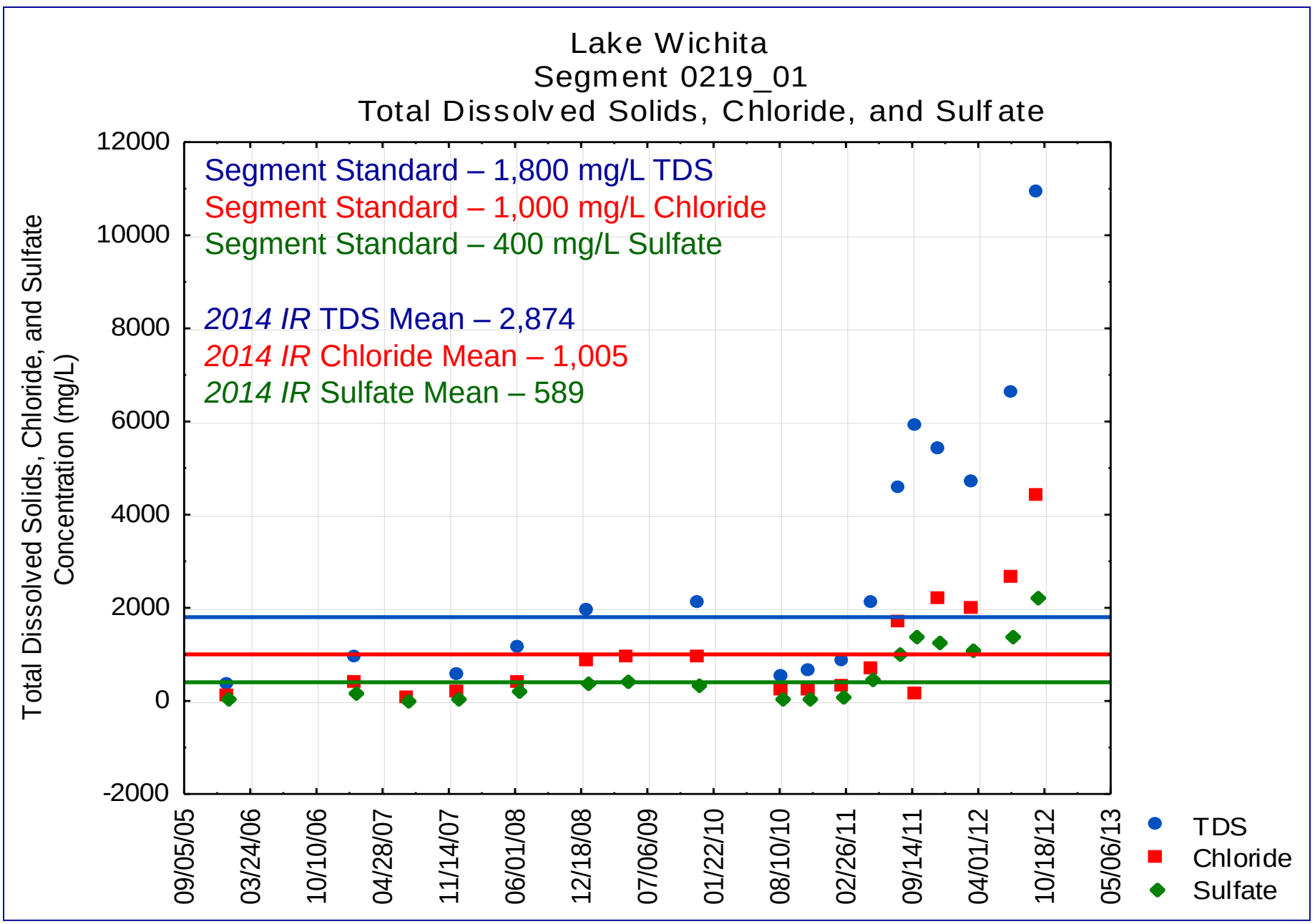
Red River Basin – Reach II

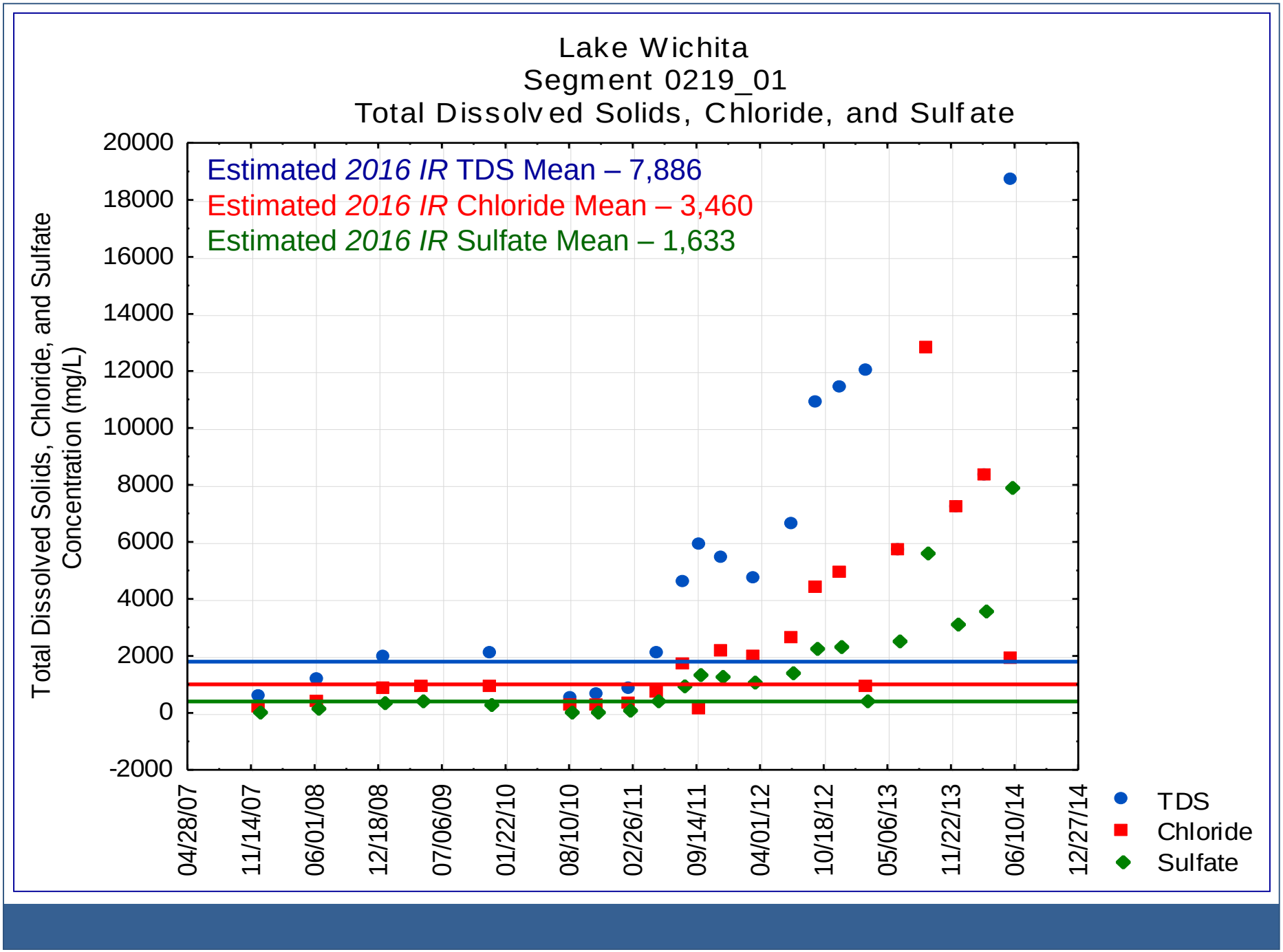
- Wichita Valley Irrigation Project (0214E)
- Unnamed Tributary of Buffalo Creek (0214F)
- Diversion Lake (0215)
- Wichita River Below Lake Kemp (0216)
- Lake Kemp (0217)
- Wichita/North Fork Wichita River (0218)
- Middle Fork Wichita River (0218A)
- Lake Wichita (0219)
  - Chloride, sulfate, TDS impairments
  - Chlorophyll-*a*, harmful algal bloom, total phosphorus
- Holliday Creek Above Lake Wichita (0219A)
- South Fork Wichita River (0226)

Red River Basin
Reach II






Lake Wichita
Segment 0219_01
Total Dissolved Solids, Chloride, and Sulfate
Segment Standard – 1,800 mg/L TDS
Segment Standard – 1,000 mg/L Chloride
Segment Standard – 400 mg/L Sulfate
2014 IR TDS Mean – 2,874
2014 IR Chloride Mean – 1,005
2014 IR Sulfate Mean – 589
Total Dissolved Solids, Chloride, and Sulfate Concentration (mg/L)
12000
10000
8000
6000
4000
2000
0
-2000
09/05/05
03/24/06
10/10/06
04/28/07
11/14/07
06/01/08
12/18/08
07/06/09
01/22/10
08/10/10
02/26/11
09/14/11
04/01/12
10/18/12
05/06/13
TDS
Chloride
Sulfate


Lake Wichita
Segment 0219_01
Total Dissolved Solids, Chloride, and Sulfate
Estimated 2016 IR TDS Mean – 7,886
Estimated 2016 IR Chloride Mean – 3,460
Estimated 2016 IR Sulfate Mean – 1,633
Total Dissolved Solids, Chloride, and Sulfate Concentration (mg/L)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
-2000
04/28/07
11/14/07
06/01/08
12/18/08
07/06/09
01/22/10
08/10/10
02/26/11
09/14/11
04/01/12
10/18/12
05/06/13
11/22/13
06/10/14
12/27/14
TDS
Chloride
Sulfate

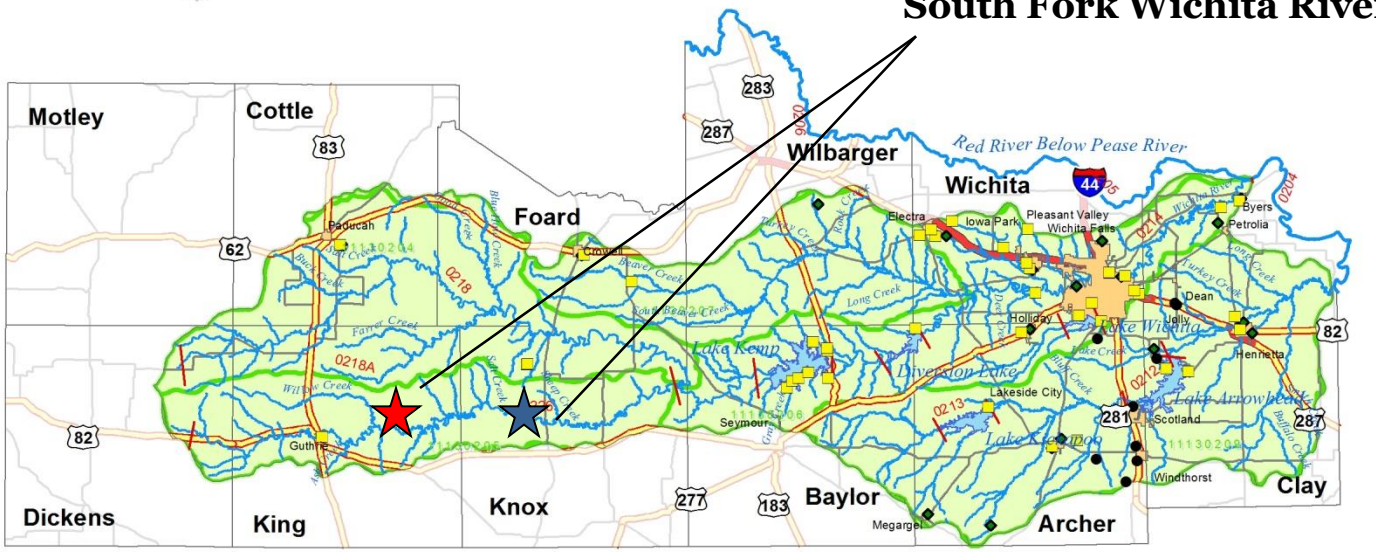
Red River Basin – Reach II

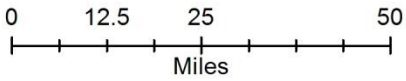
- Wichita Valley Irrigation Project (0214E)
- Unnamed Tributary of Buffalo Creek (0214F)
- Diversion Lake (0215)
- Wichita River Below Lake Kemp (0216)
- Lake Kemp (0217)
- Wichita/North Fork Wichita River (0218)
- Middle Fork Wichita River (0218A)
- Lake Wichita (0219)
- Holliday Creek Above Lake Wichita (0219A)
  - No impairments or concerns
- South Fork Wichita River (0226)

Red River Basin – Reach II

- Wichita Valley Irrigation Project (0214E)
- Unnamed Tributary of Buffalo Creek (0214F)
- Diversion Lake (0215)
- Wichita River Below Lake Kemp (0216)
- Lake Kemp (0217)
- Wichita/North Fork Wichita River (0218)
- Middle Fork Wichita River (0218A)
- Lake Wichita (0219)
- Holliday Creek Above Lake Wichita (0219A)
- South Fork Wichita River (0226)
  - No impairments
  - Ammonia concern

Red River Basin
Reach II





Legend

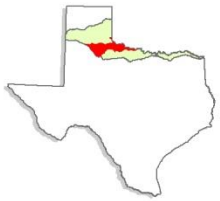
- MSW / Landfill
- Wastewater Outfall
- CAFO
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Reach II

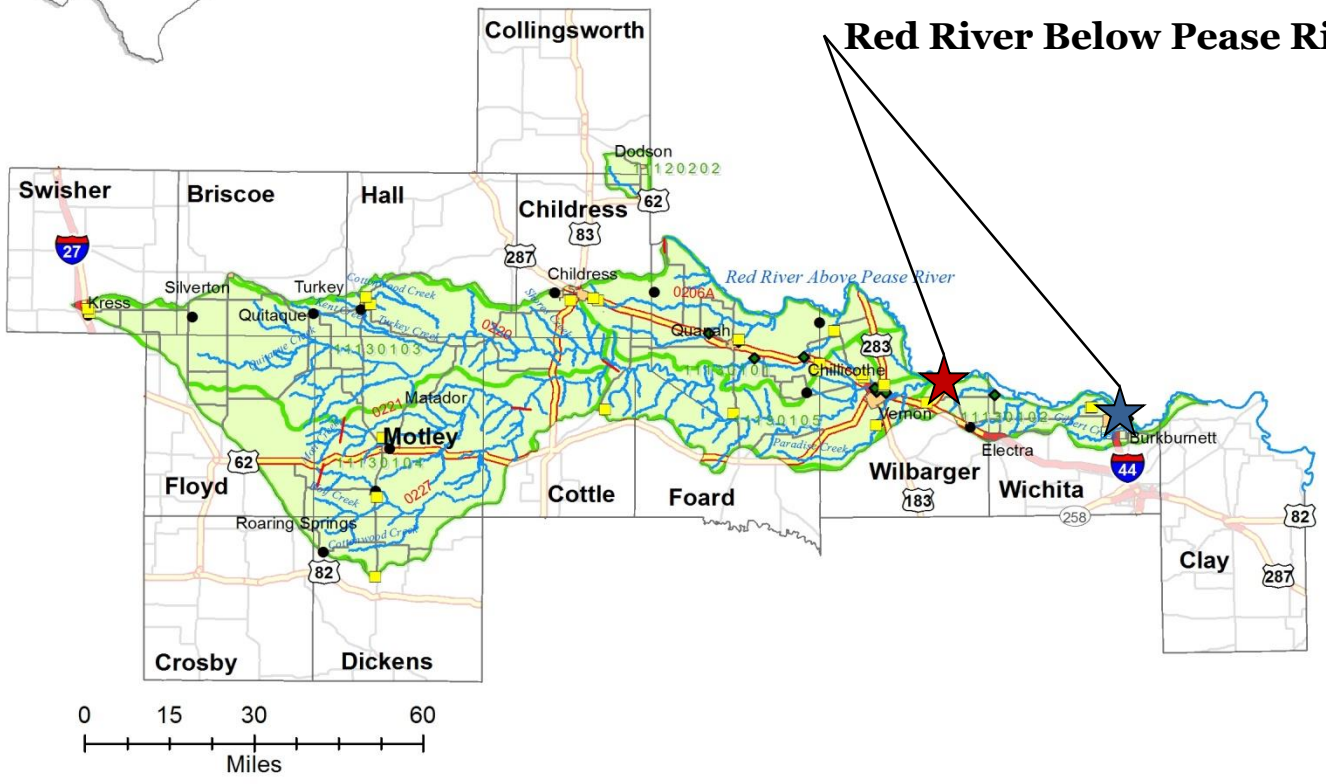
South Fork Wichita River at SH 6 – February 16, 2017

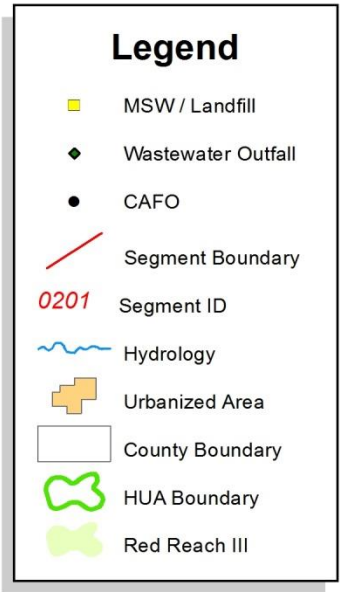
Red River Basin –Reach III

- Red River Below Pease River (0205)
  - No impairments
  - Chlorophyll-*a* concern
- Wildhorse Creek (0205A)
- Red River Above Pease River (0206)
- South Groesbeck Creek (0206B)
- Upper/North Fork Pease River (0220)
- Middle Fork Pease River (0221)
- Pease River (0230)
- Paradise Creek (0230A)

Red River Basin
Reach III



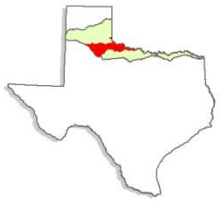


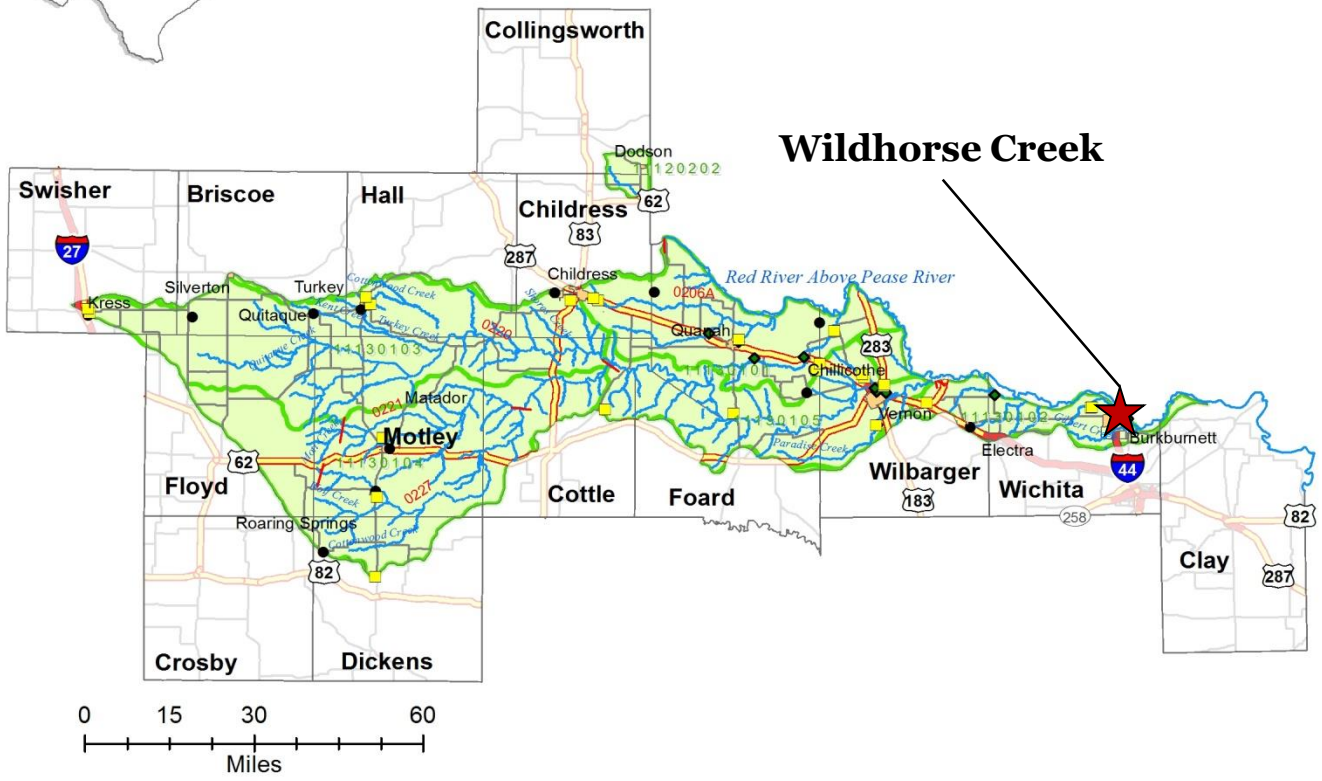


Red River Basin –Reach III

- Red River Below Pease River (0205)
- Wildhorse Creek (0205A)
  - No impairments or concerns
- Red River Above Pease River (0206)
- South Groesbeck Creek (0206B)
- Upper/North Fork Pease River (0220)
- Middle Fork Pease River (0221)
- Pease River (0230)
- Paradise Creek (0230A)

Red River Basin
Reach III



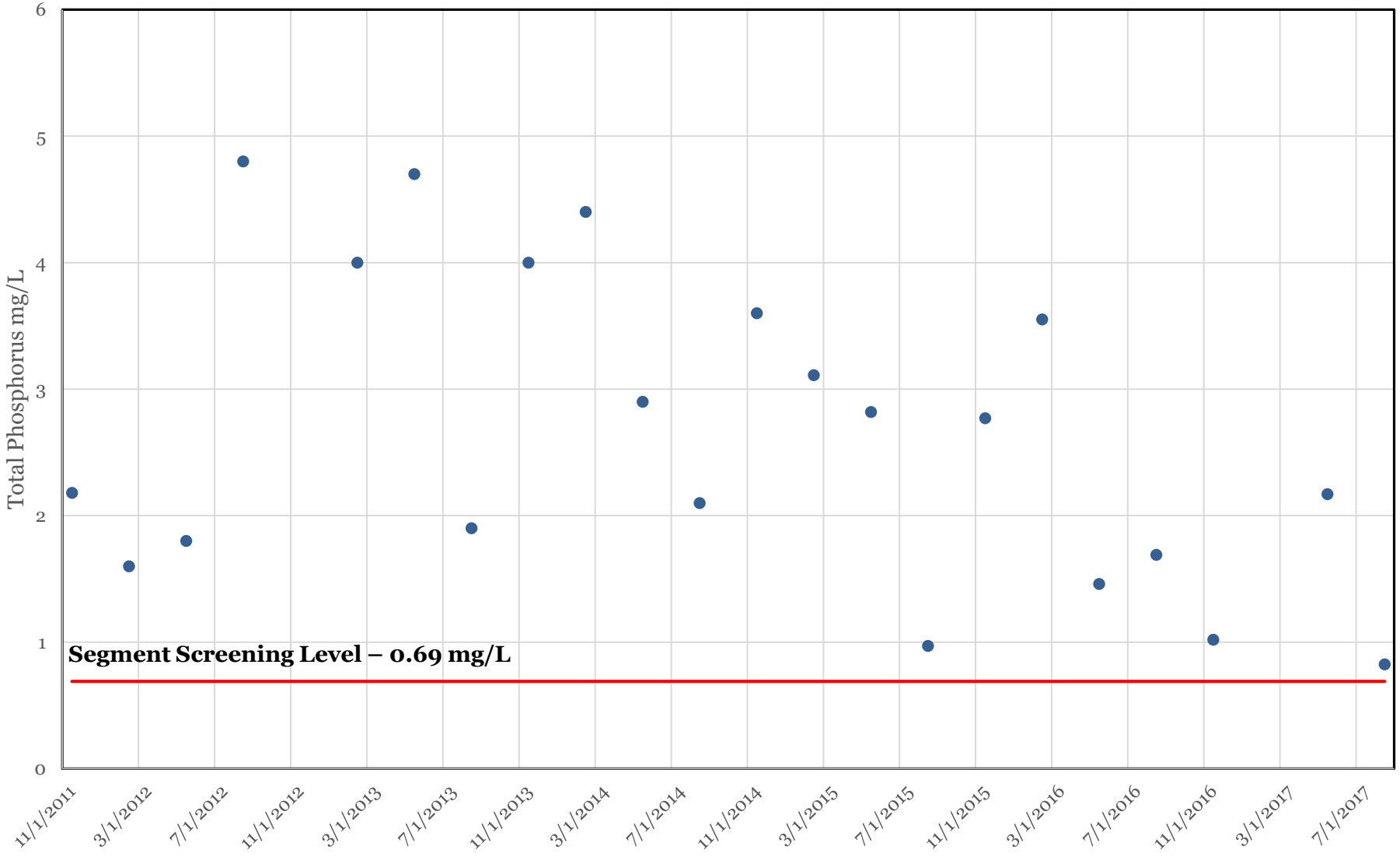


Legend

- MSW / Landfill
- Wastewater Outfall
- CAFO
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Reach III

Wildhorse Creek at I44 – February 12, 2018

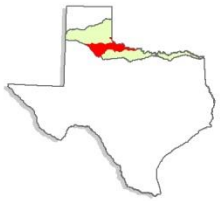
Wildhorse Creek
Segment 0205A_01
Total Phosphorus

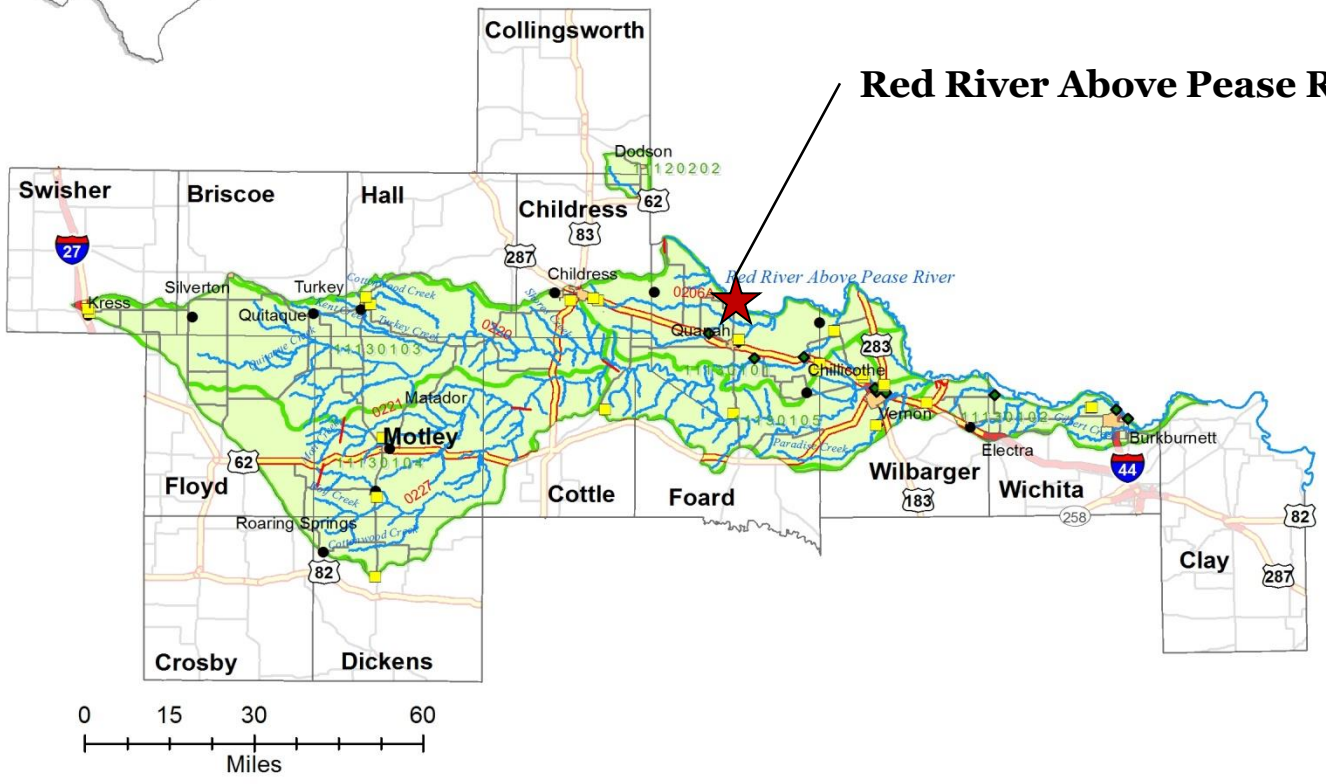


Red River Basin –Reach III

- Red River Below Pease River (0205)
- Wildhorse Creek (0205A)
- Red River Above Pease River (0206)
  - No impairments or concerns
- South Groesbeck Creek (0206B)
- Upper/North Fork Pease River (0220)
- Middle Fork Pease River (0221)
- Pease River (0230)
- Paradise Creek (0230A)

Red River Basin
Reach III





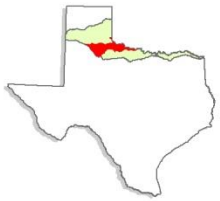
Legend

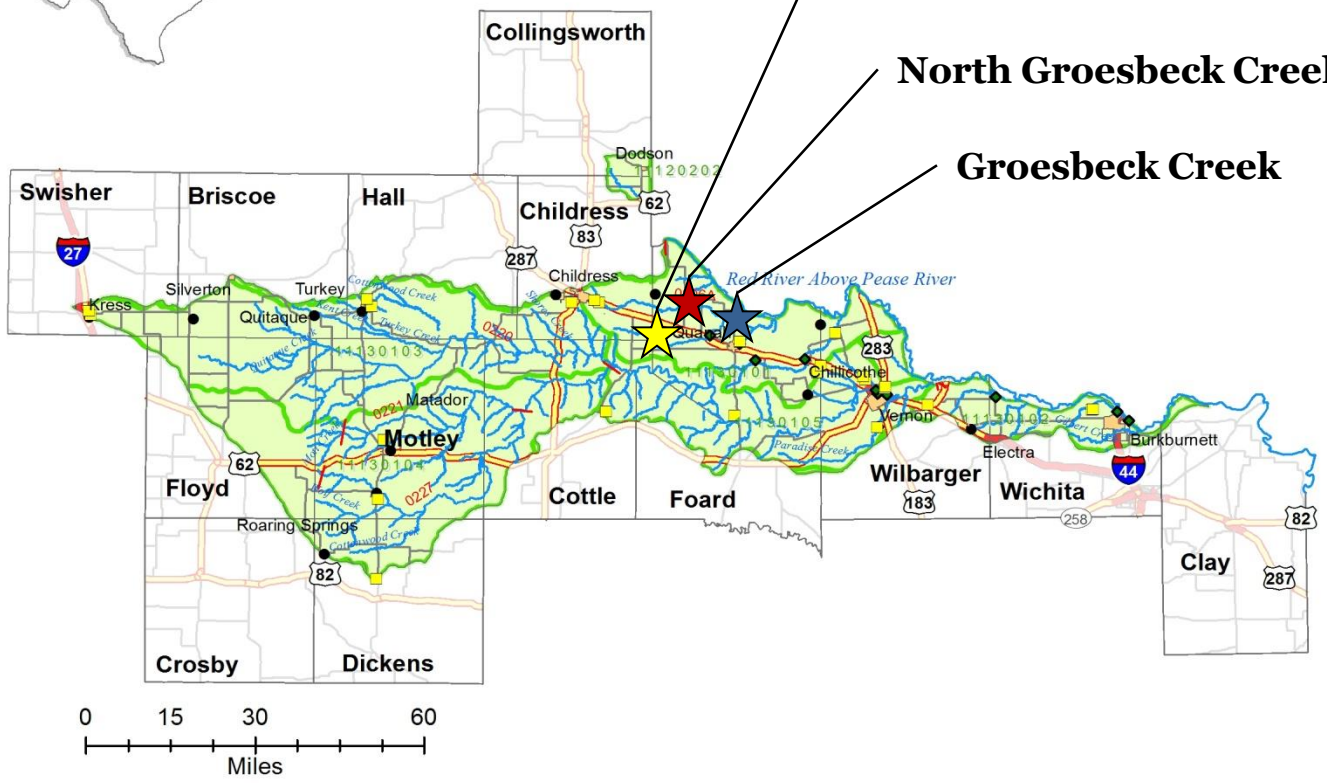
- MSW / Landfill
- Wastewater Outfall
- CAFO
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Reach III

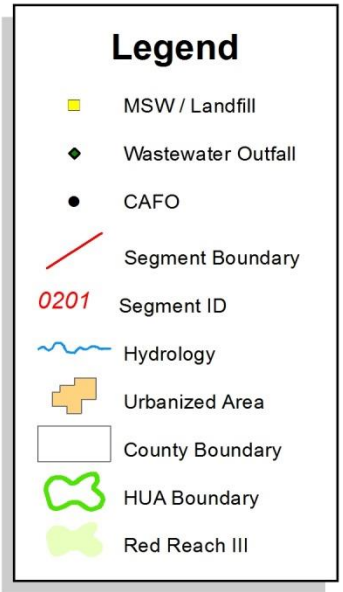
Red River Basin –Reach III

- Red River Below Pease River (0205)
- Wildhorse Creek (0205A)
- Red River Above Pease River (0206)
- Groesbeck Creek (0206A)
  - No impairments or concerns
- Upper/North Fork Pease River (0220)
- Middle Fork Pease River (0221)
- Pease River (0230)
- Paradise Creek (0230A)

Red River Basin
Reach III





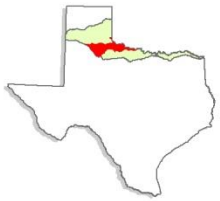


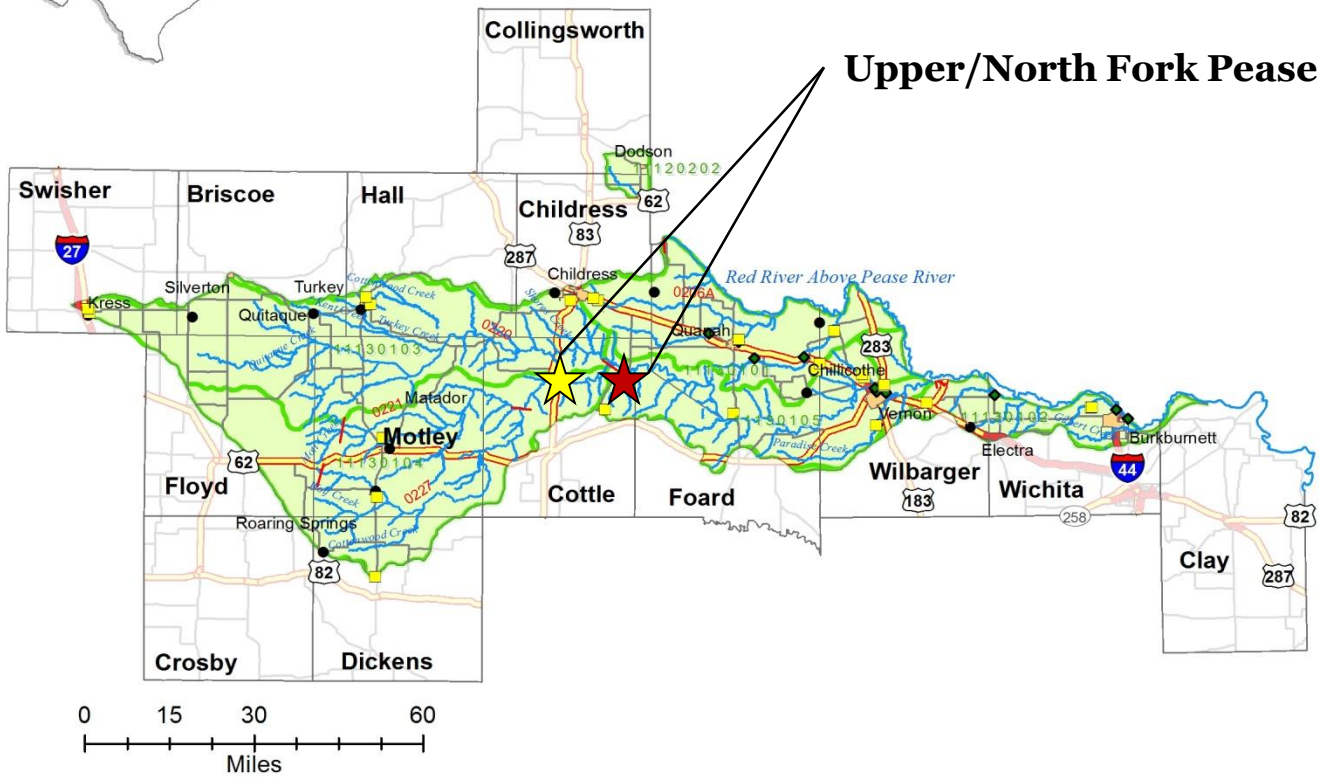
Groesbeck Creek at SH 6 – February 11, 2017

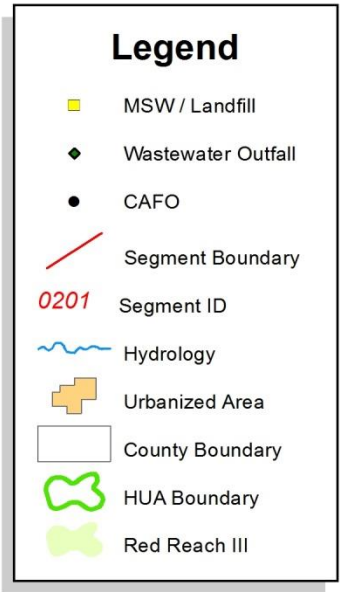
Red River Basin –Reach III

- Red River Below Pease River (0205)
- Wildhorse Creek (0205A)
- Red River Above Pease River (0206)
- South Groesbeck Creek (0206B)
- Upper/North Fork Pease River (0220)
  - No impairments or concerns
- Middle Fork Pease River (0221)
- Pease River (0230)
- Paradise Creek (0230A)

Red River Basin
Reach III





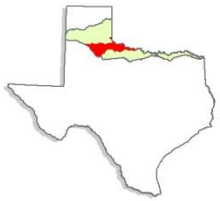


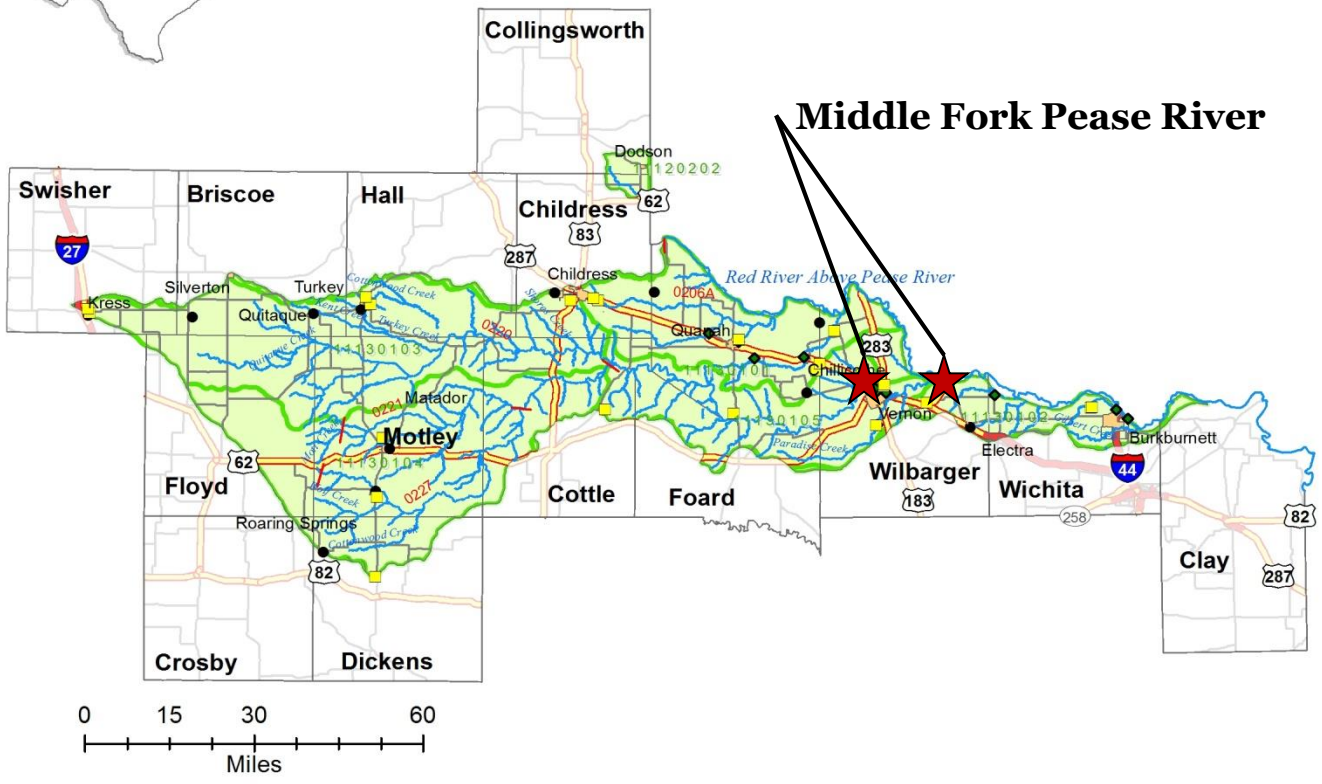
Pease River at FM 104 – November 2, 2017

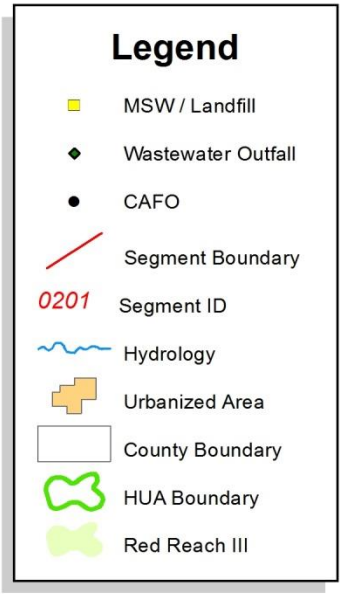
Red River Basin –Reach III

- Red River Below Pease River (0205)
- Wildhorse Creek (0205A)
- Red River Above Pease River (0206)
- South Groesbeck Creek (0206B)
- Upper/North Fork Pease River (0220)
- Middle Fork Pease River (0221)
  - No impairments or concerns
- Pease River (0230)
- Paradise Creek (0230A)

Red River Basin
Reach III





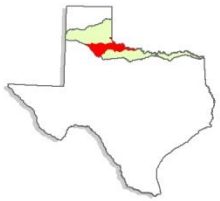


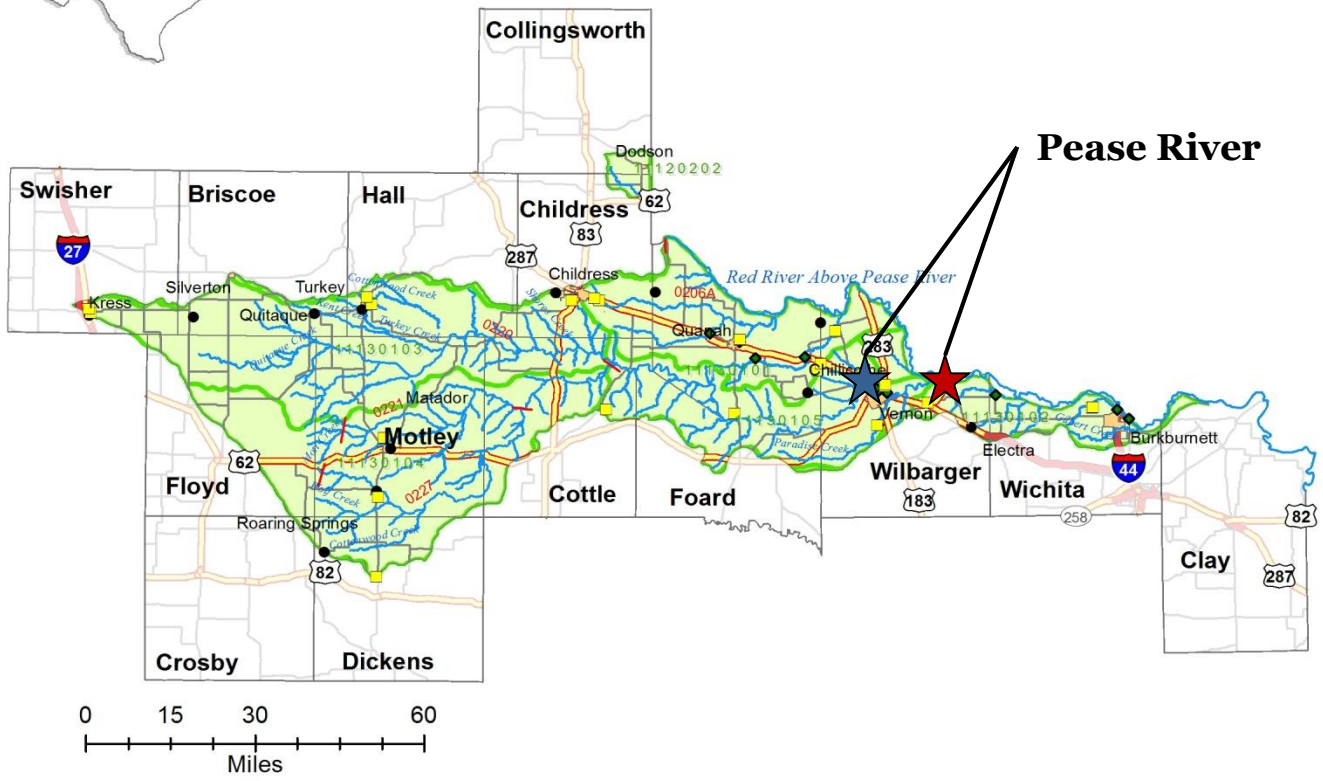
Pease River NE of Paducah – February 11, 2017

Red River Basin –Reach III

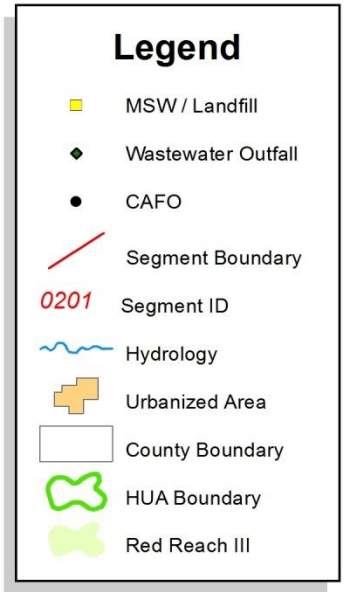
- Red River Below Pease River (0205)
- Wildhorse Creek (0205A)
- Red River Above Pease River (0206)
- South Groesbeck Creek (0206B)
- Upper/North Fork Pease River (0220)
- Middle Fork Pease River (0221)
- Pease River (0230)
  - No impairments or concerns
- Paradise Creek (0230A)

Red River Basin
Reach III

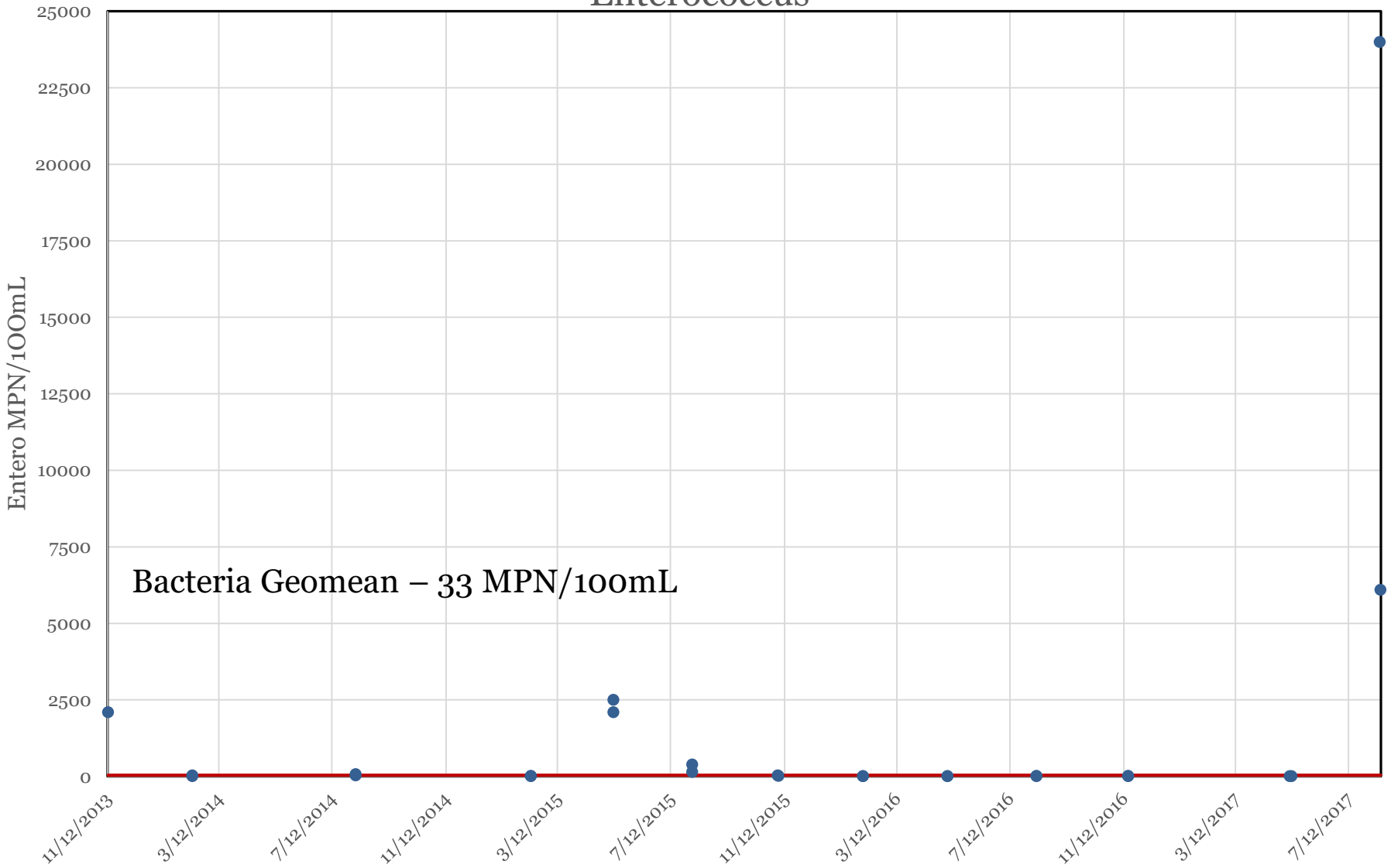




N
W E
S



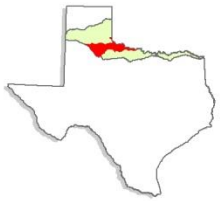
Pease River
Segment 0230_02
Enterococcus

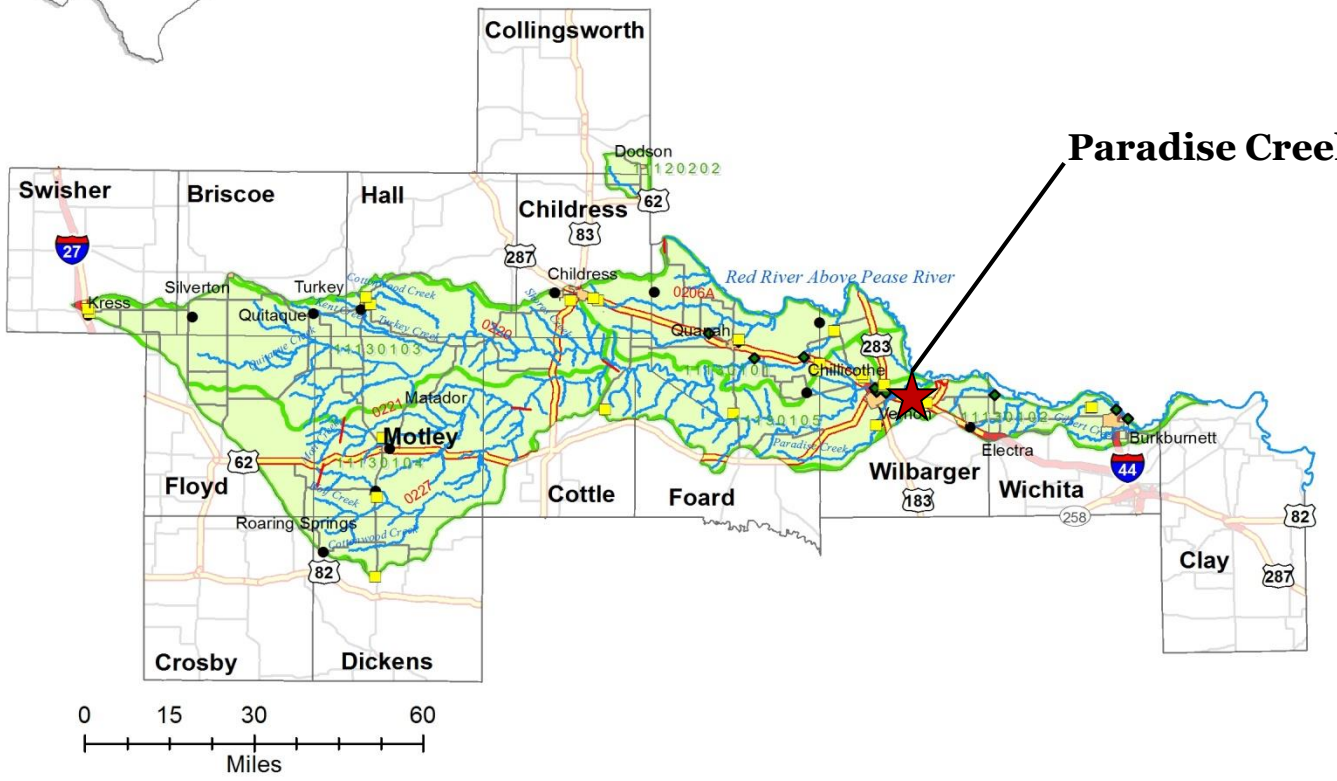


Red River Basin –Reach III

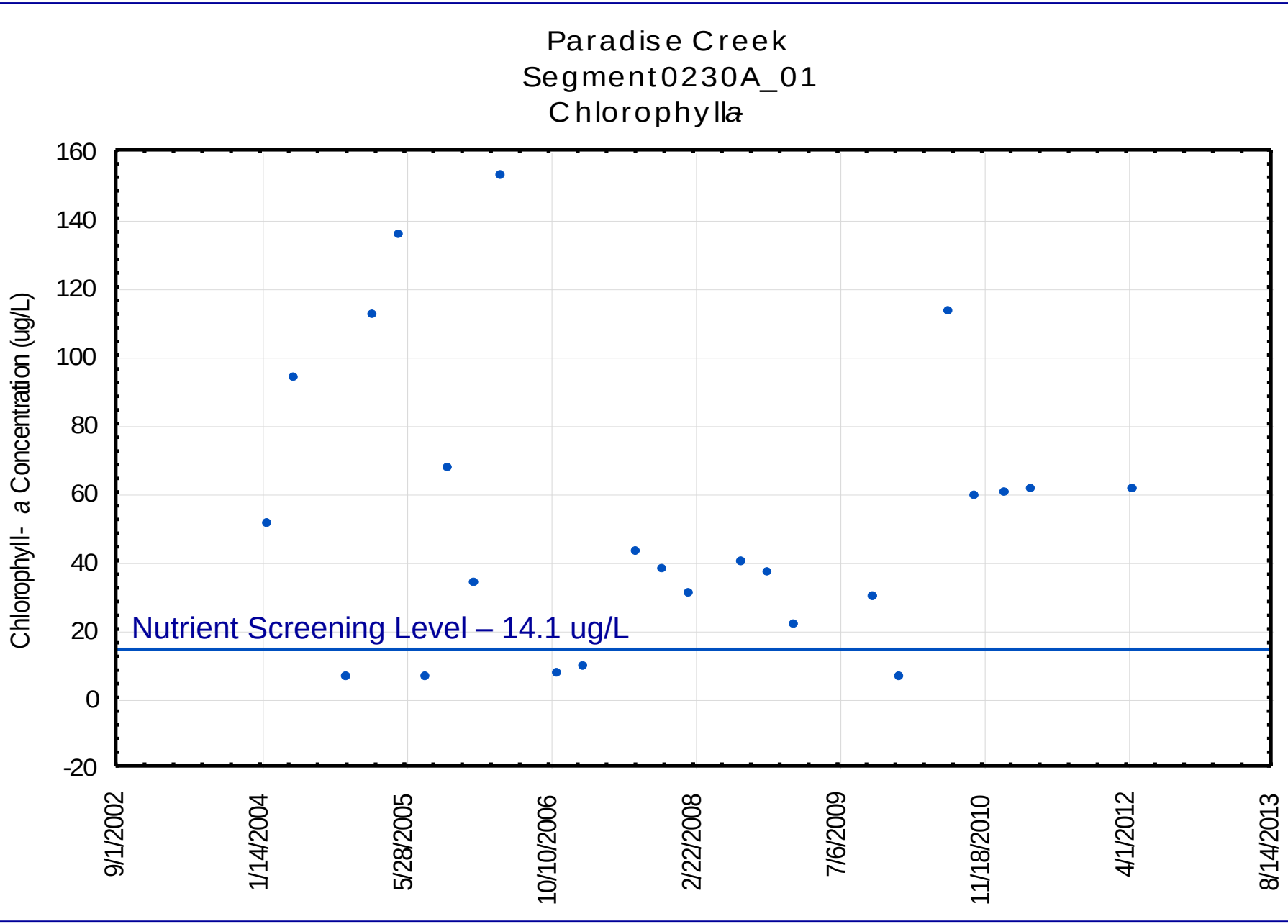
- Red River Below Pease River (0205)
- Wildhorse Creek (0205A)
- Red River Above Pease River (0206)
- South Groesbeck Creek (0206B)
- Upper/North Fork Pease River (0220)
- Middle Fork Pease River (0221)
- Pease River (0230)
- Paradise Creek (0230A)
  - Bacteria impairment
  - Chlorophyll-*a* concern
  - RUAA has been reviewed by TCEQ
  - Recommended change to Secondary 1 in the segment's WQS (2017)

Red River Basin
Reach III





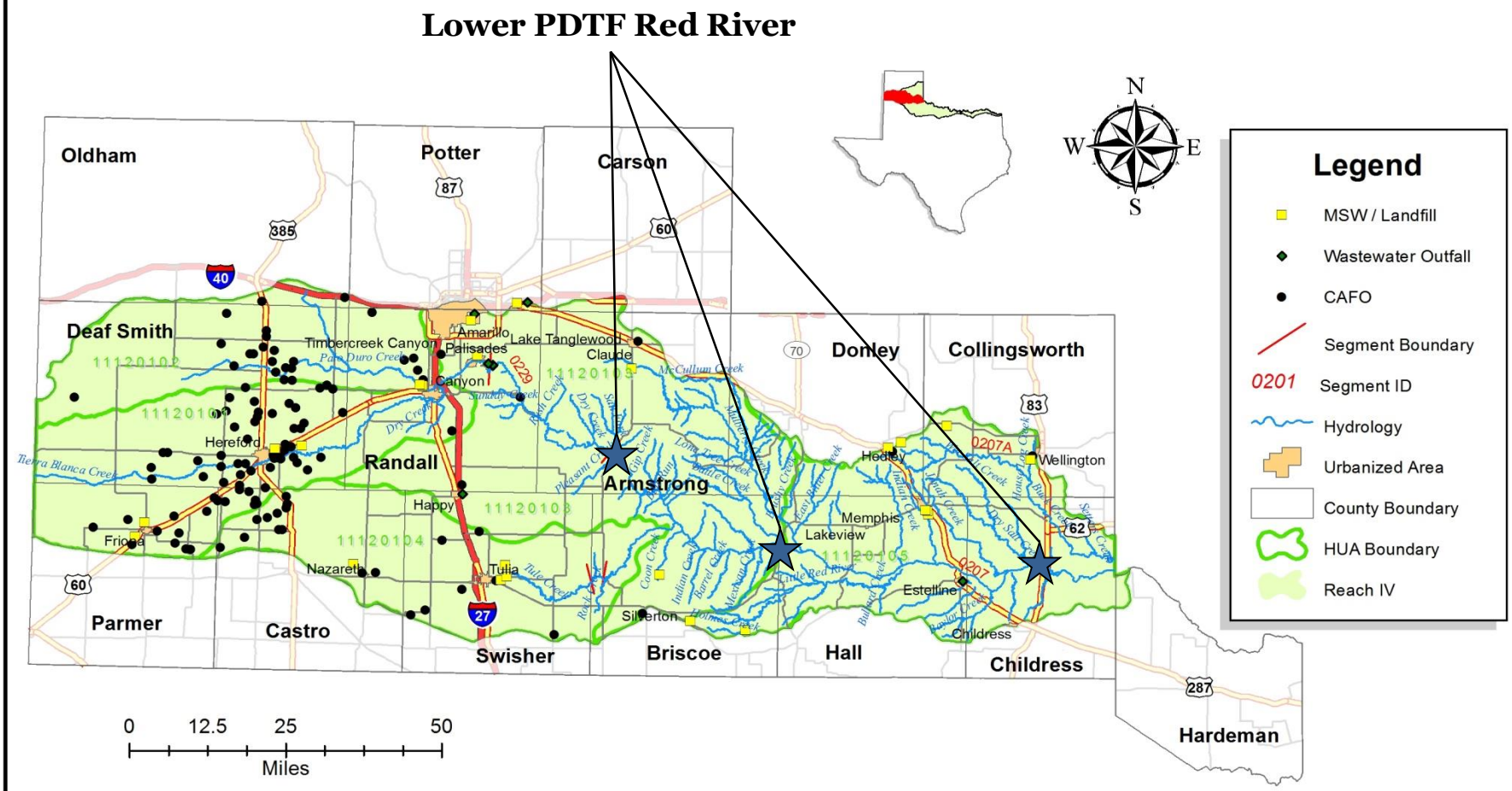
Paradise Creek at US 287 – February 14, 2017


Paradise Creek
Segment0230A_01
Chlorophyll-a
Chlorophyll- a Concentration (ug/L)
160
140
120
100
80
60
40
20
0
-20
Nutrient Screening Level – 14.1 ug/L
9/1/2002
1/14/2004
5/28/2005
10/10/2006
2/22/2008
7/6/2009
11/18/2010
4/1/2012
8/14/2013

Red River Basin – Reach IV

- Lower PDTF Red River (0207)
  - Bacteria impairment
  - Chlorophyll-*a* concern
  - RUAA was conducted in this segment
- Buck Creek (0207A)
- Mackenzie Reservoir (0228)
- Upper PDTF Red River (0229)
- Lake Tanglewood (0229A)

Red River Basin
Reach IV

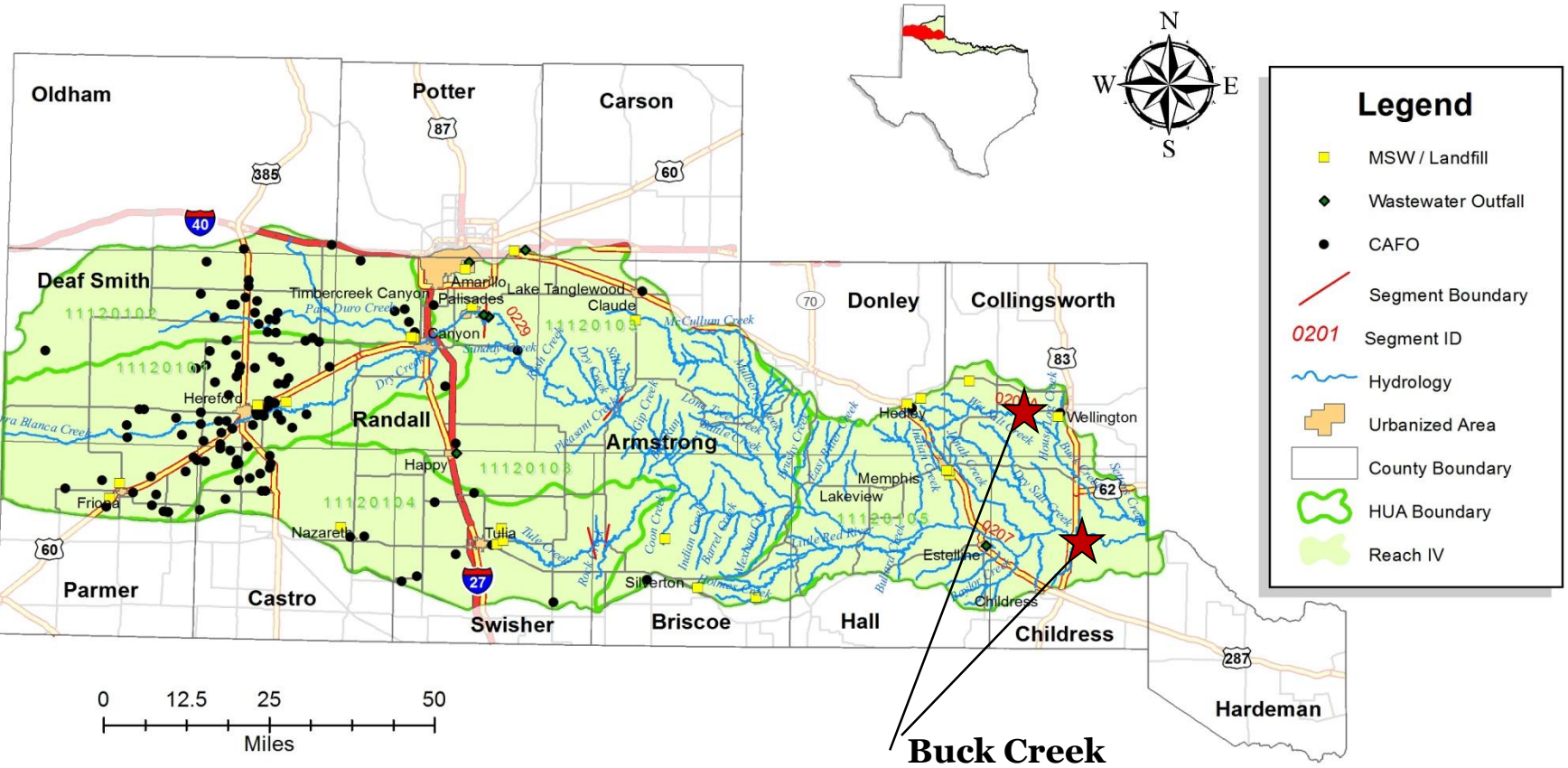


Lower PDTF Red River at US 70 – April 4, 2018

Red River Basin – Reach IV

- Lower PDTF Red River (0207)
- Buck Creek (0207A)
  - No impairments
  - Nitrate concern
- Mackenzie Reservoir (0228)
- Upper PDTF Red River (0229)
- Lake Tanglewood (0229A)

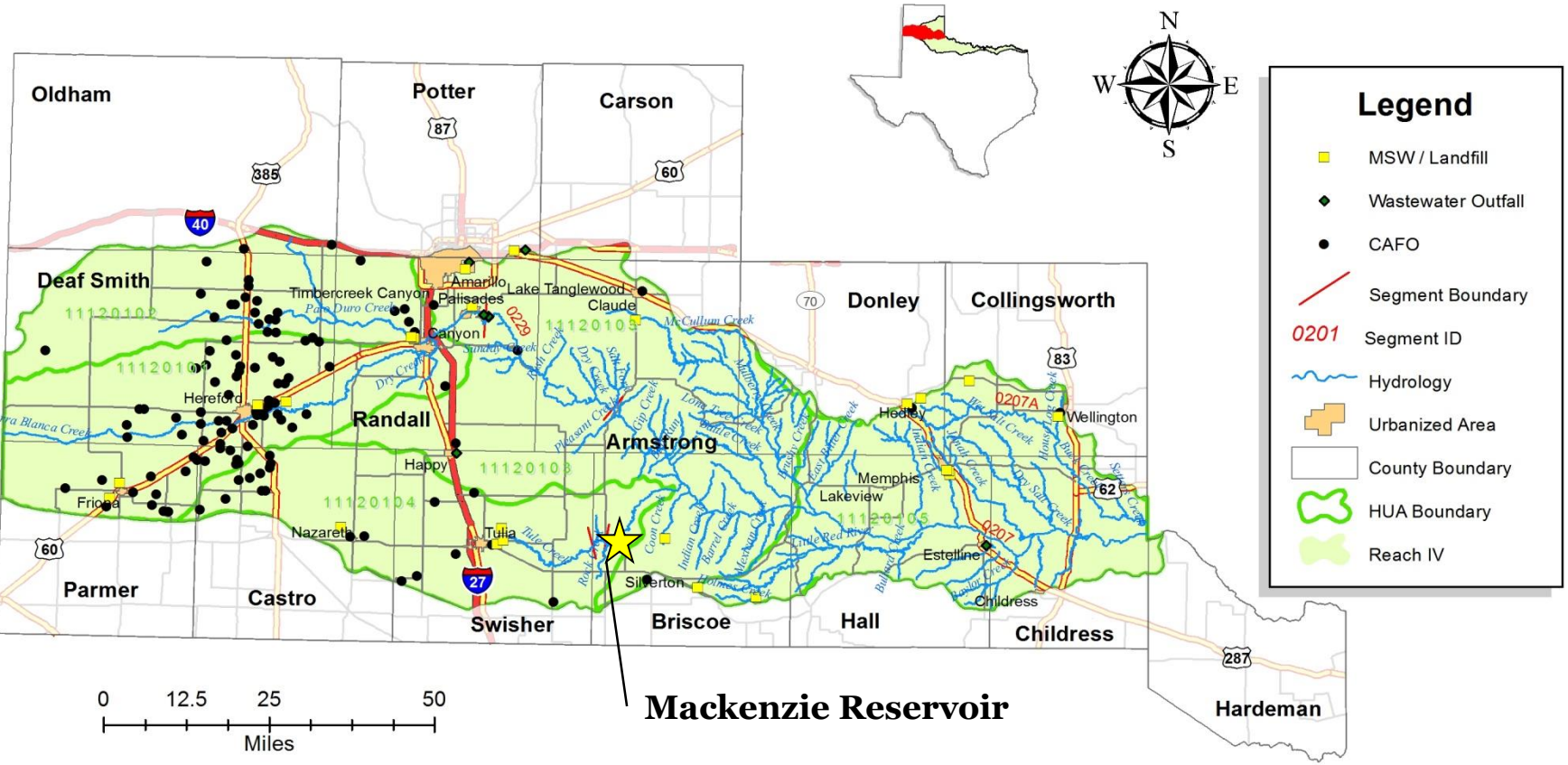
Red River Basin
Reach IV



Red River Basin – Reach IV

- Lower PDTF Red River (0207)
- Buck Creek (0207A)
- Mackenzie Reservoir (0228)
  - TDS impairment
  - No concerns
- Upper PDTF Red River (0229)
- Lake Tanglewood (0229A)

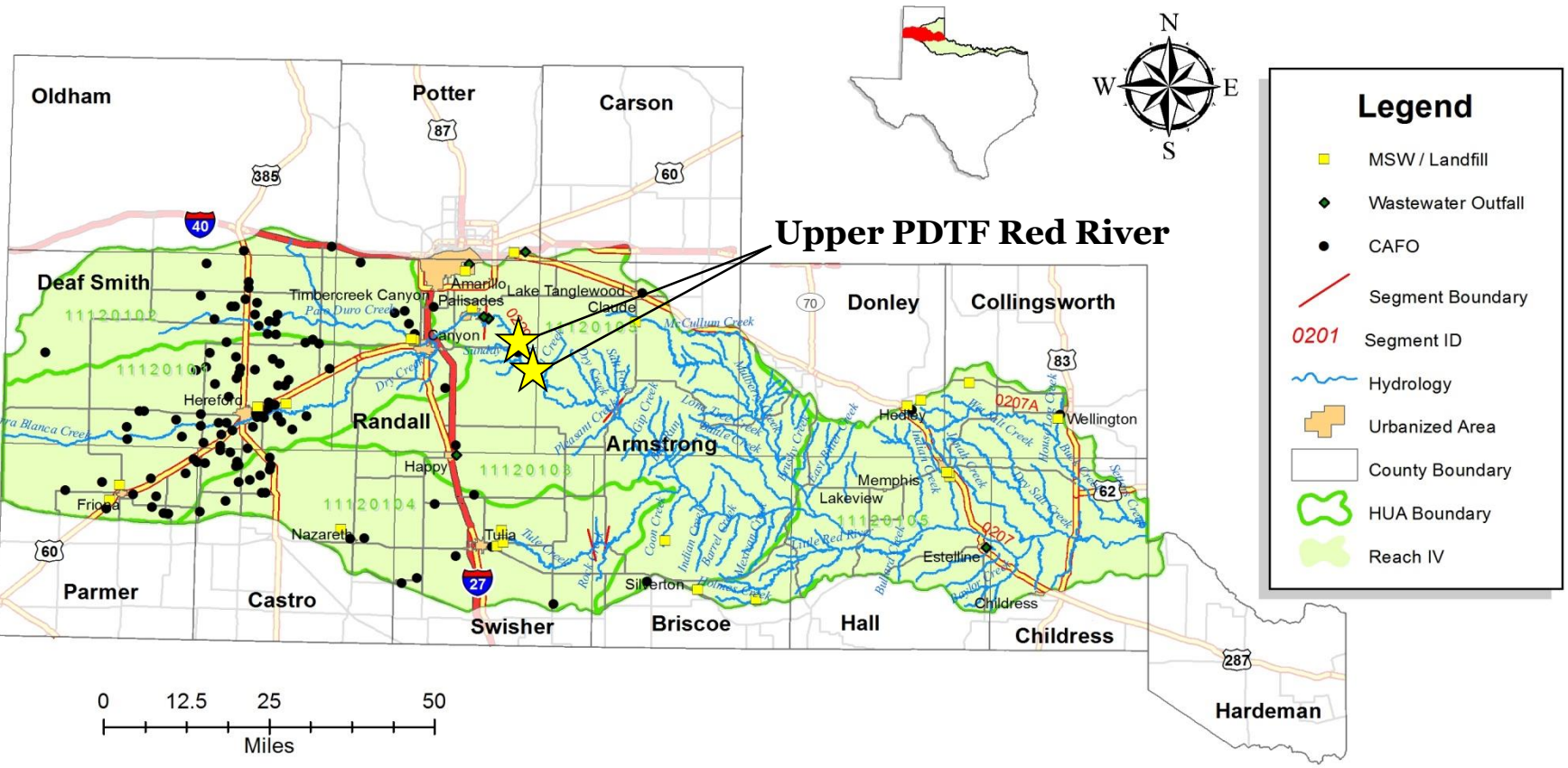
Red River Basin
Reach IV

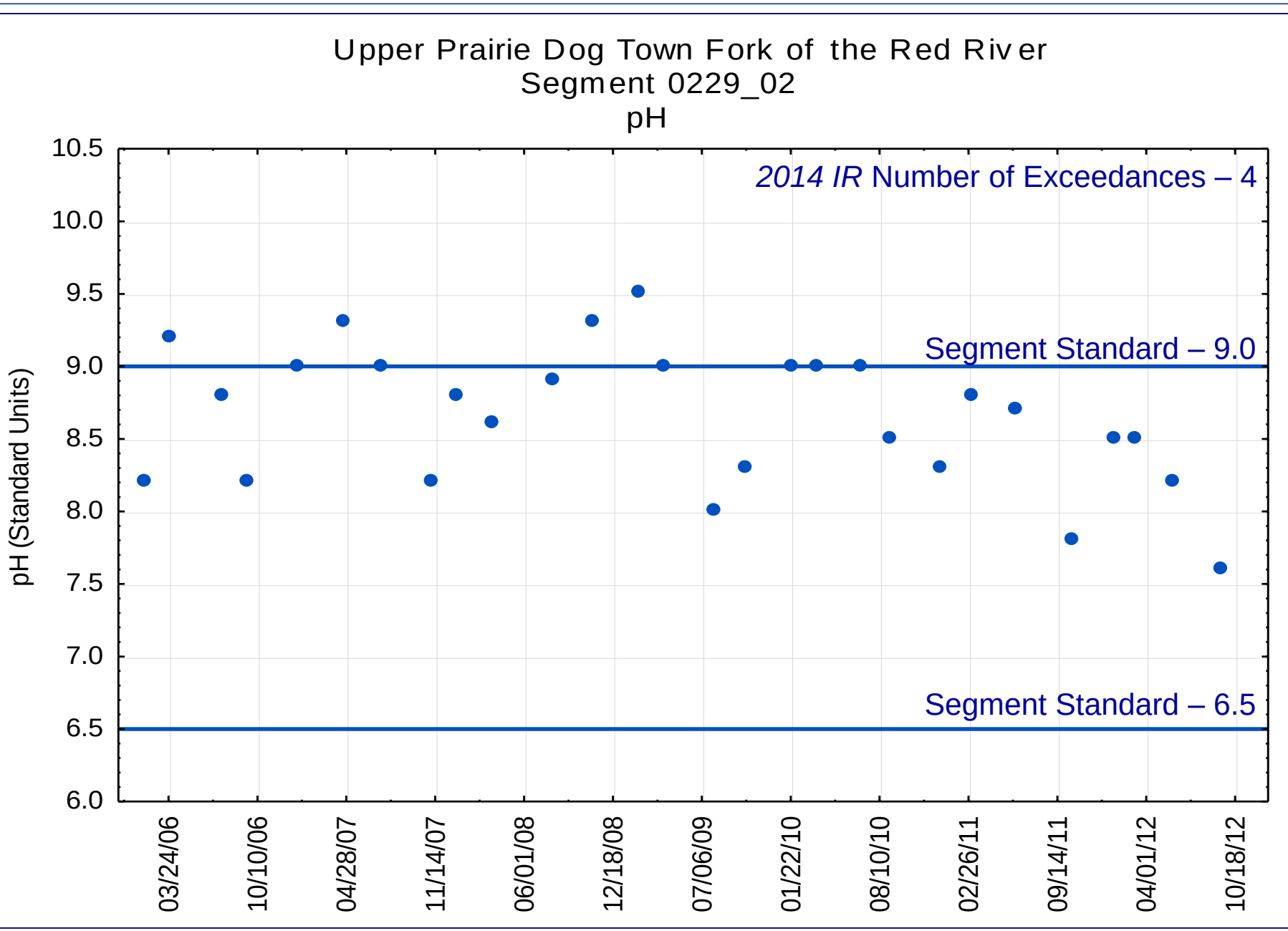


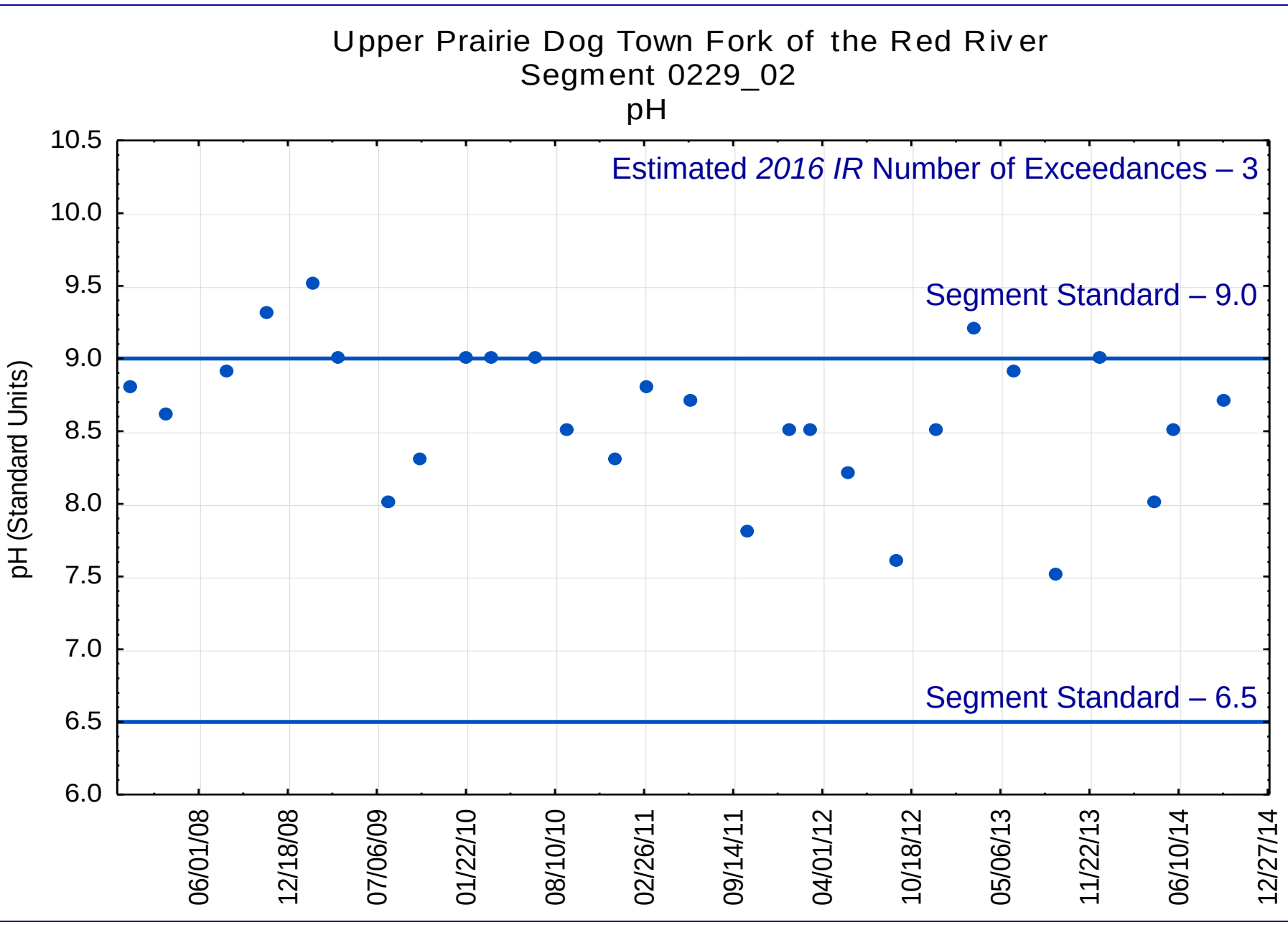
Red River Basin – Reach IV

- Lower PDTF Red River (0207)
- Buck Creek (0207A)
- Mackenzie Reservoir (0228)
- Upper PDTF Red River (0229)
  - pH impairment delisted in 2016IR
  - Chlorophyll-*a*, bacteria, depressed DO, nitrate, and total phosphorus concerns
- Lake Tanglewood (0229A)

Red River Basin
Reach IV



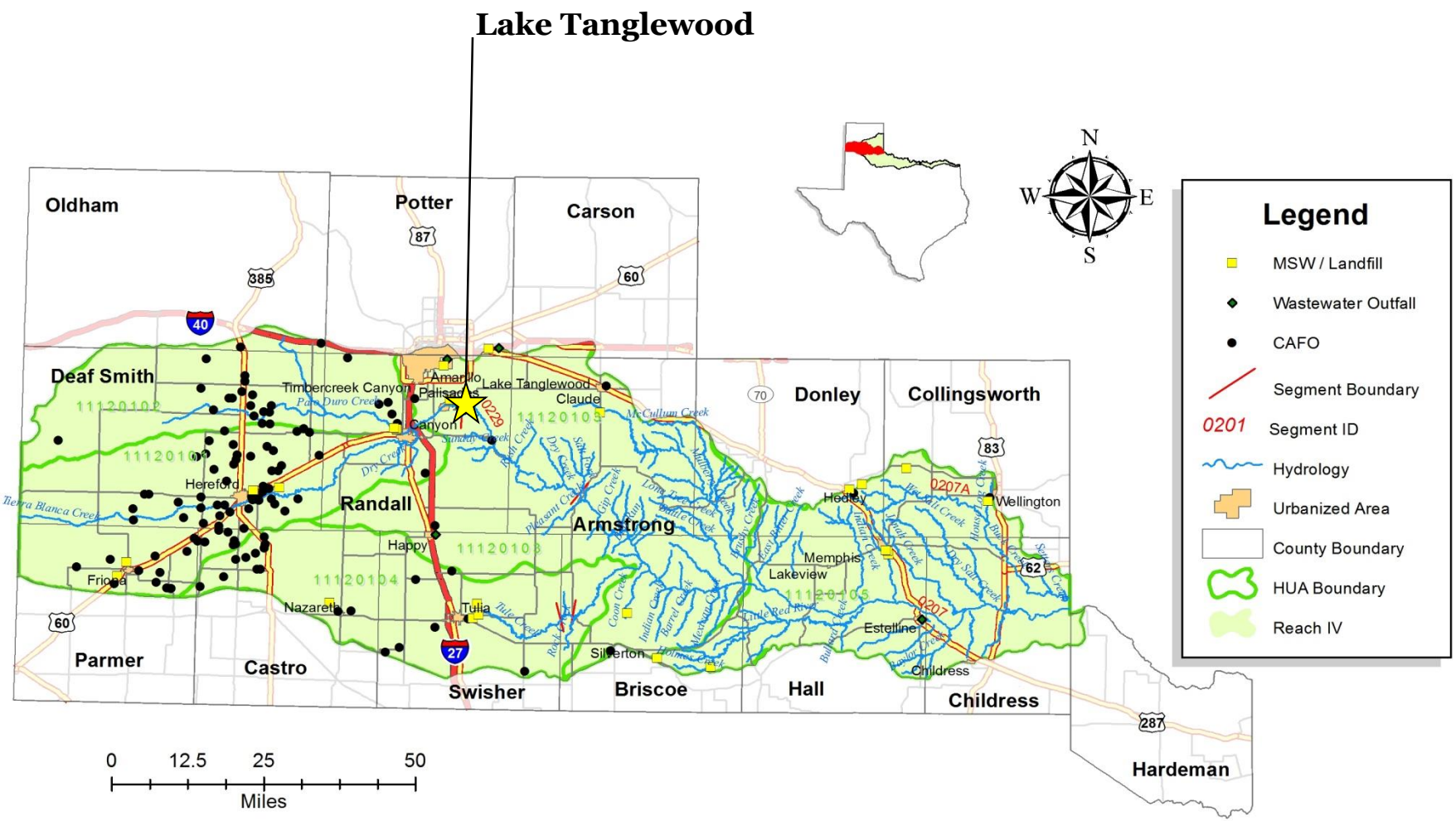

Upper Prairie Dog Town Fork of the Red River
Segment 0229_02
pH
2014 IR Number of Exceedances – 4
Segment Standard – 9.0
Segment Standard – 6.5
pH (Standard Units)
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
03/24/06
10/10/06
04/28/07
11/14/07
06/01/08
12/18/08
07/06/09
01/22/10
08/10/10
02/26/11
09/14/11
04/01/12
10/18/12


Upper Prairie Dog Town Fork of the Red River
Segment 0229_02
pH
Estimated *2016 IR* Number of Exceedances – 3
Segment Standard – 9.0
Segment Standard – 6.5
pH (Standard Units)
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
06/01/08
12/18/08
07/06/09
01/22/10
08/10/10
02/26/11
09/14/11
04/01/12
10/18/12
05/06/13
11/22/13
06/10/14
12/27/14

Red River Basin – Reach IV

- Lower PDTF Red River (0207)
- Buck Creek (0207A)
- Mackenzie Reservoir (0228)
- Upper PDTF Red River (0229)
- Lake Tanglewood (0229A)
  - No impairments
  - Ammonia, chlorophyll-*a*, depressed DO, nitrate, and total phosphorus concerns

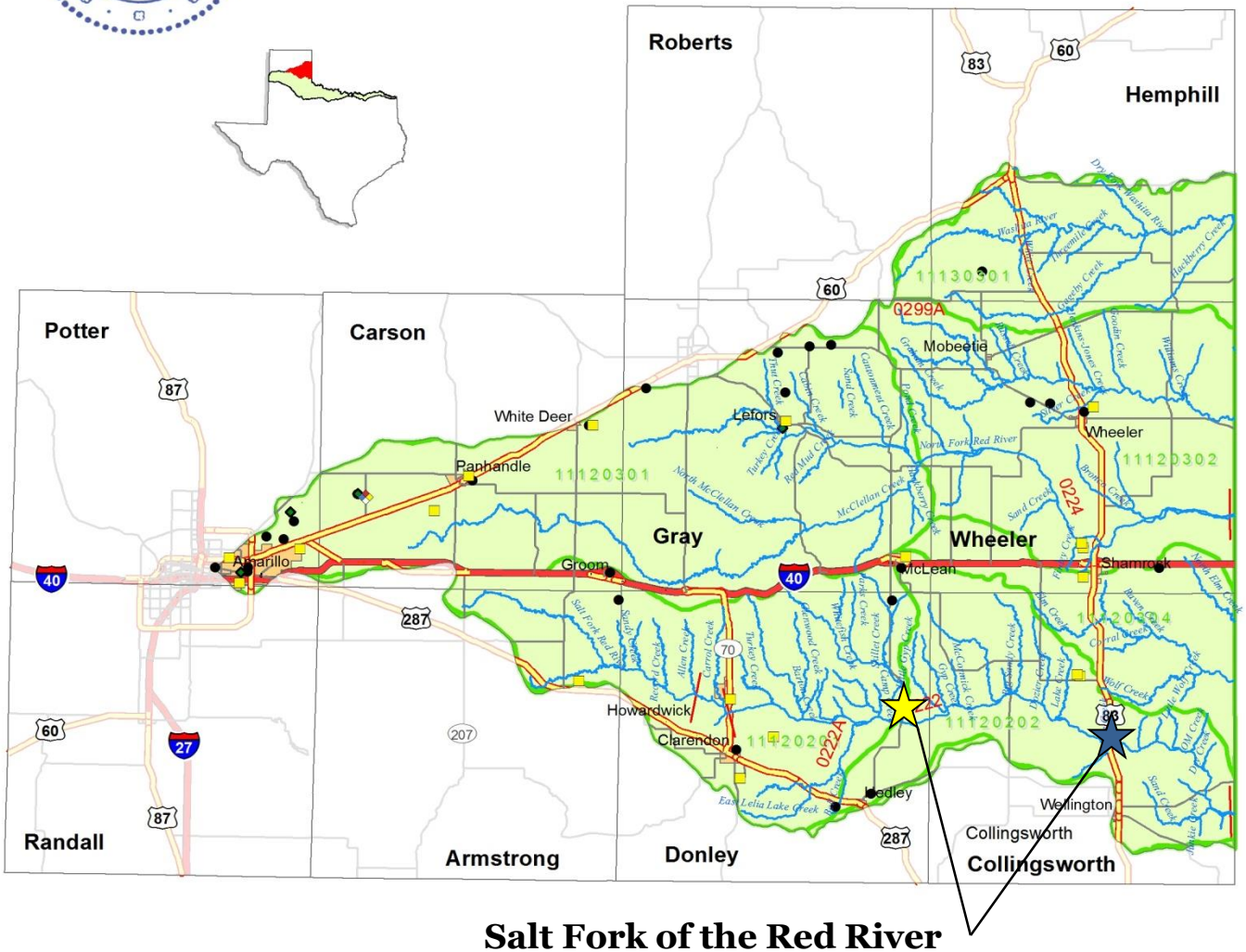
Red River Basin
Reach IV



Red River Basin – Reach V

- Salt Fork of the Red River (0222)
  - Bacteria impairment
  - Nitrate concern
- Lelia Lake Creek (0222A)
- Greenbelt Lake (0223)
- North Fork Red River (0224)
- McClellan Creek (0224A)
- Sweetwater Creek (0299A)

Red River Basin
Reach V



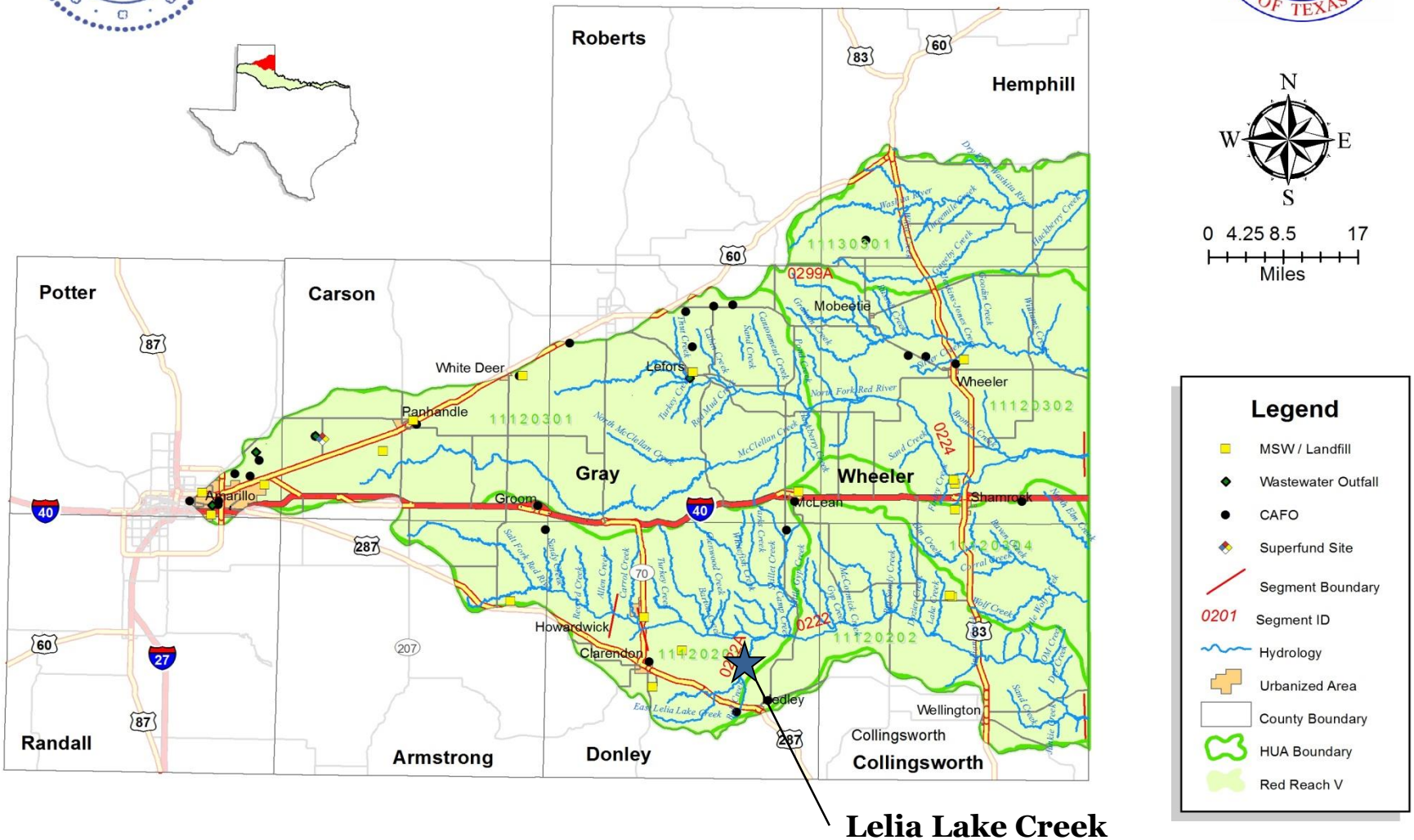
Salt Fork of the Red River

Salt Fork of the Red River at US 83 – January 18, 2017

Red River Basin – Reach V

- Salt Fork of the Red River (0222)
- Lelia Lake Creek (0222A)
  - No impairments or concerns
  - Proposed ALM in May 2018
- Greenbelt Lake (0223)
- North Fork Red River (0224)
- McClellan Creek (0224A)
- Sweetwater Creek (0299A)

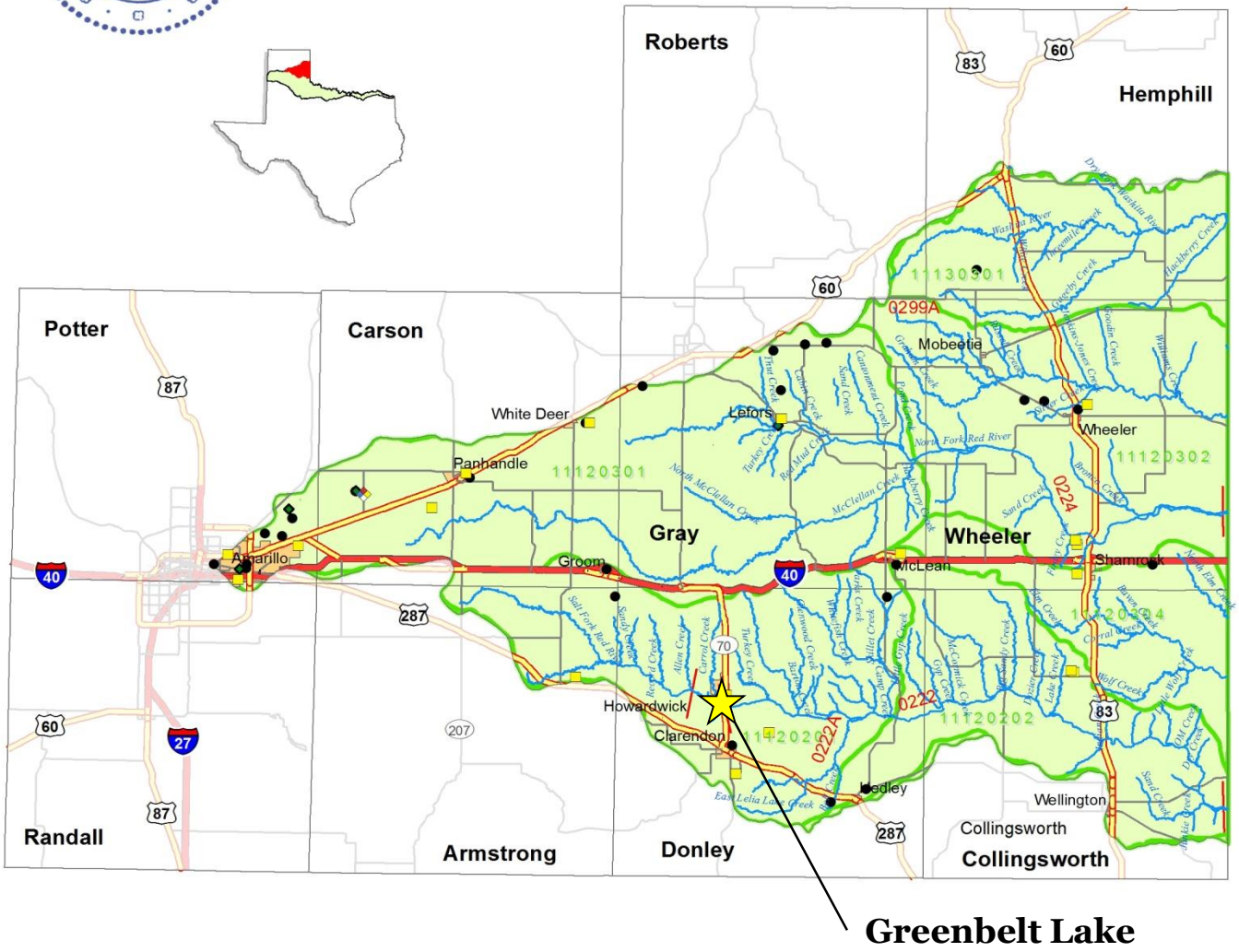
Red River Basin
Reach V



Red River Basin – Reach V

- Salt Fork of the Red River (0222)
- Lelia Lake Creek (0222A)
- Greenbelt Lake (0223)
  - No impairments or concerns
- North Fork Red River (0224)
- McClellan Creek (0224A)
- Sweetwater Creek (0299A)

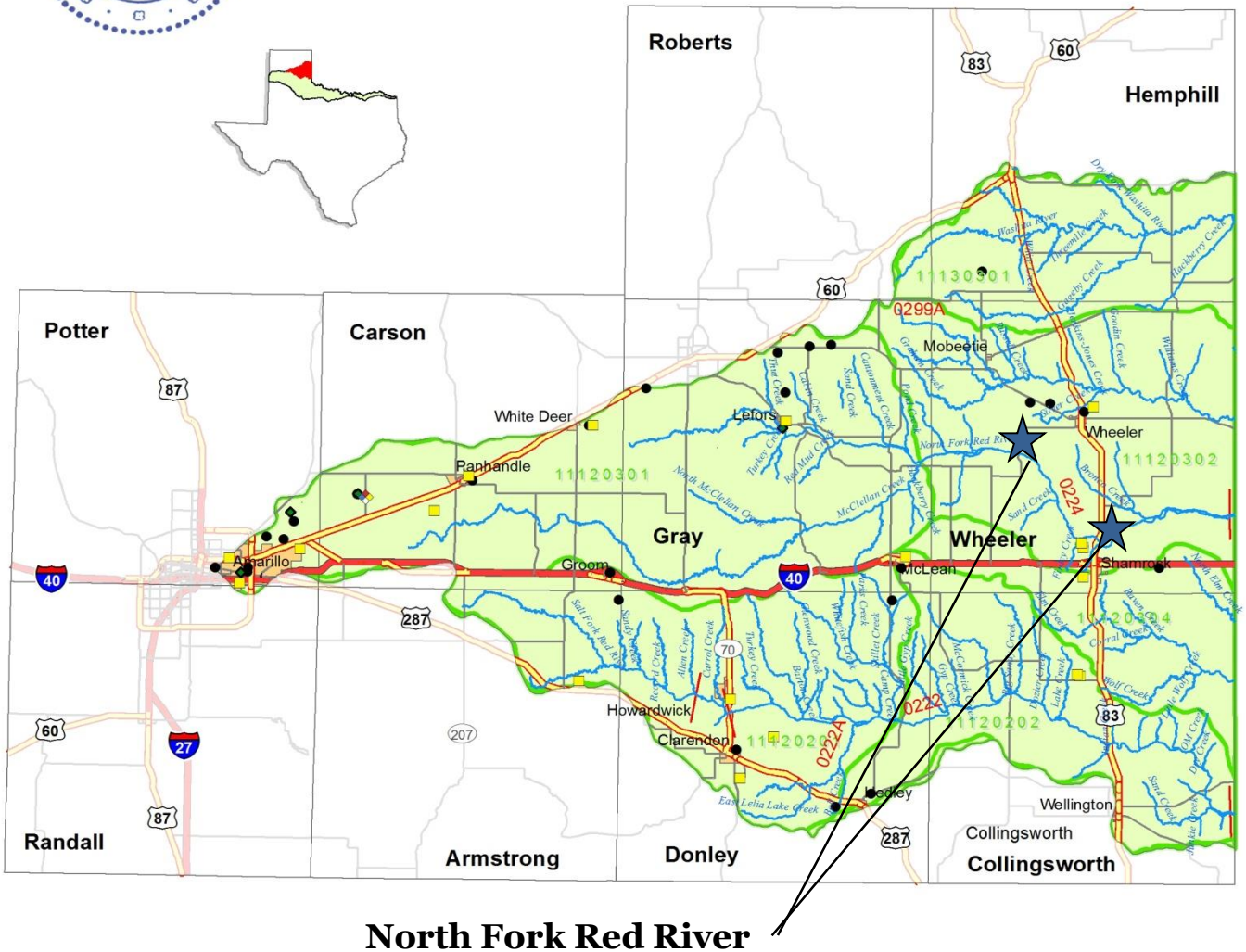
Red River Basin
Reach V



Red River Basin – Reach V

- Salt Fork of the Red River (0222)
- Lelia Lake Creek (0222A)
- Greenbelt Lake (0223)
- North Fork Red River (0224)
  - No impairments or concerns
- McClellan Creek (0224A)
- Sweetwater Creek (0299A)

Red River Basin
Reach V



N
W E
S

0 4.25 8.5 17
Miles

Legend

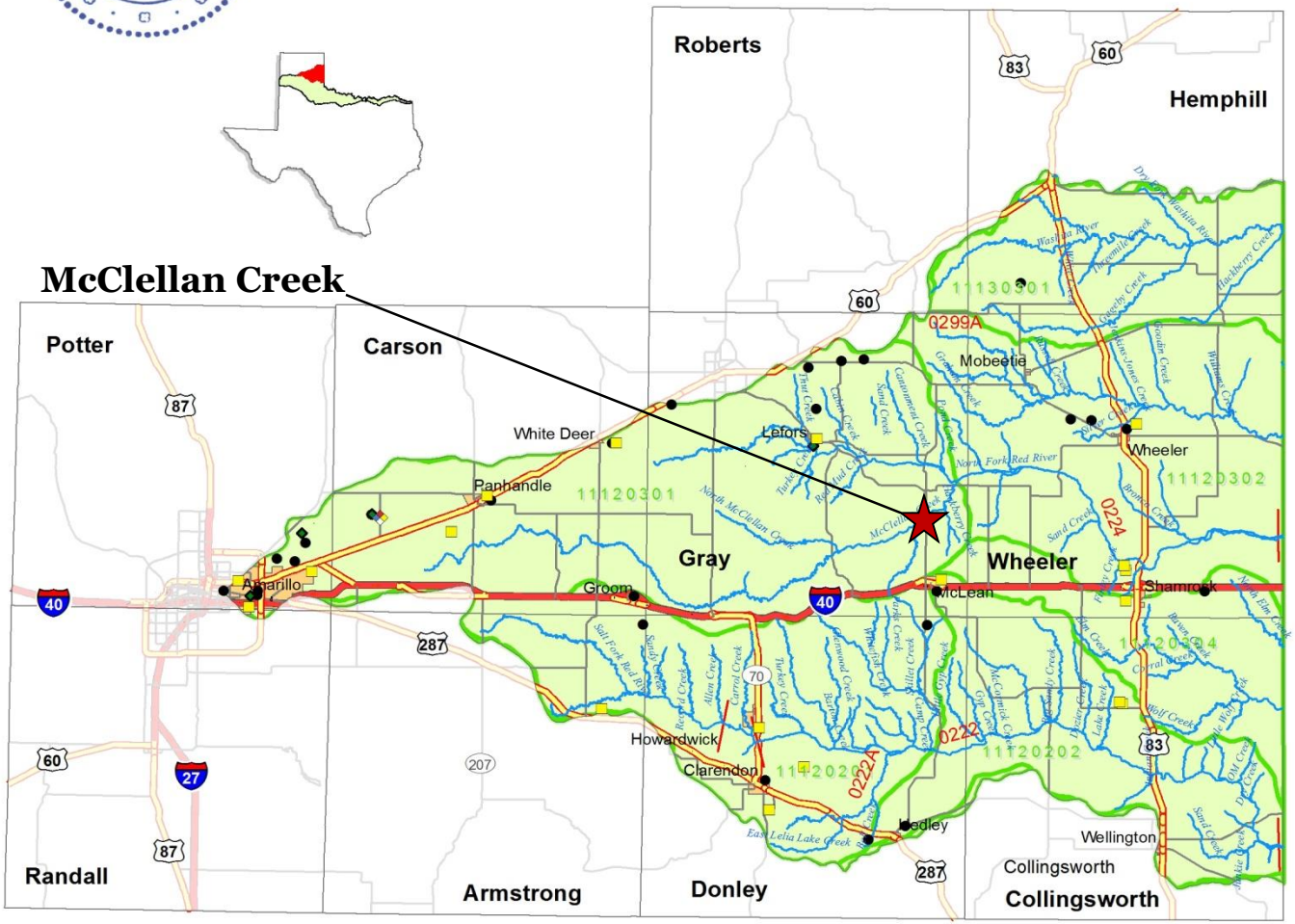
- MSW / Landfill
- Wastewater Outfall
- CAFO
- Superfund Site
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Reach V

North Fork Red River at FM2473 – April 18, 2018

Red Reach V

- Salt Fork of the Red River (0222)
- Lelia Lake Creek (0222A)
- Greenbelt Lake (0223)
- North Fork Red River (0224)
- McClellan Creek (0224A)
  - Bacteria impairment
  - No concerns
- Sweetwater Creek (0299A)

Red River Basin
Reach V



N
W E
S

0 4.25 8.5 17
Miles

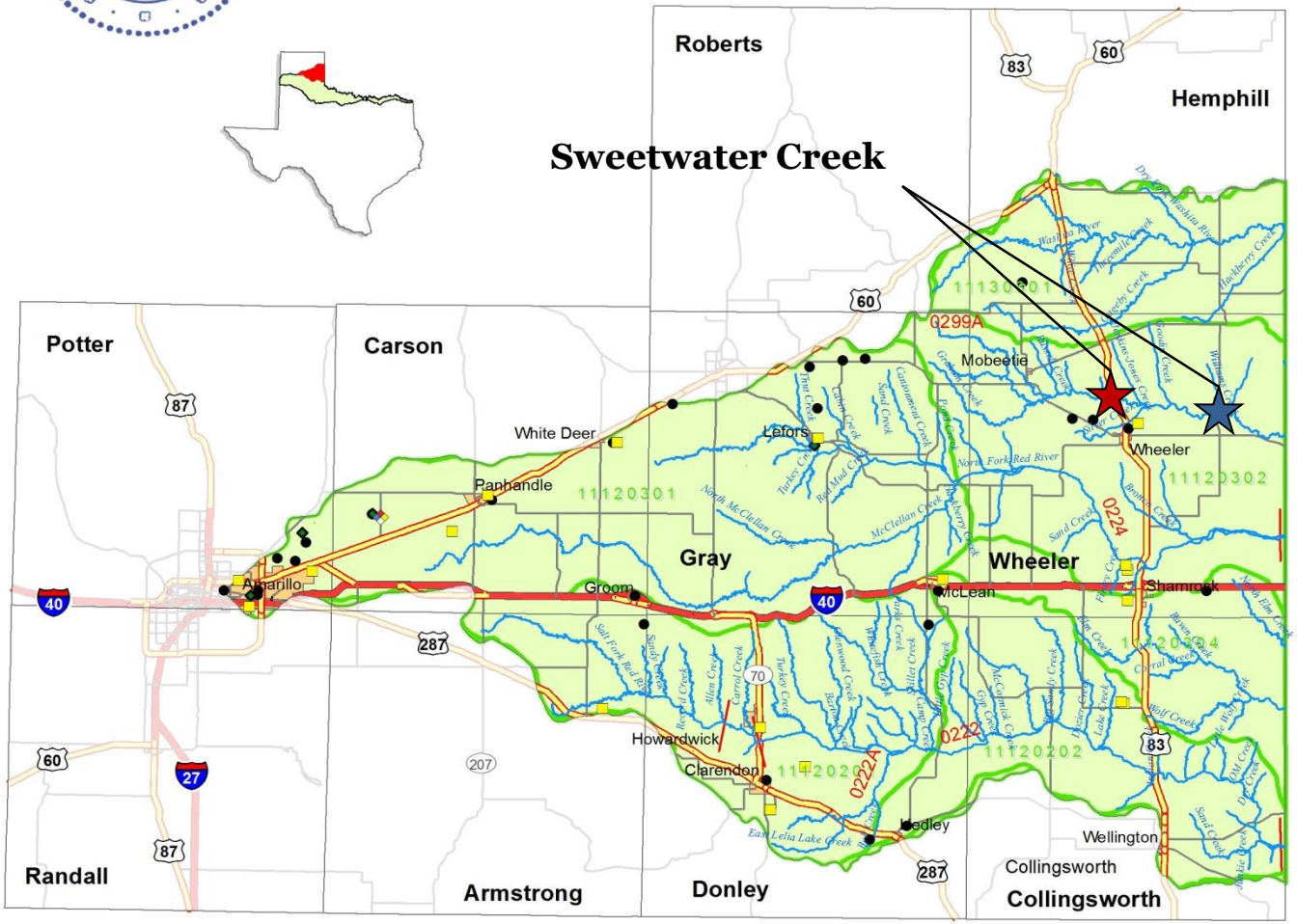
Legend

- MSW / Landfill
- Wastewater Outfall
- CAFO
- Superfund Site
- Segment Boundary
- 0201 Segment ID
- Hydrology
- Urbanized Area
- County Boundary
- HUA Boundary
- Red Reach V

Red River Basin – Reach V

- Salt Fork of the Red River (0222)
- Lelia Lake Creek (0222A)
- Greenbelt Lake (0223)
- North Fork Red River (0224)
- McClellan Creek (0224A)
- Sweetwater Creek (0299A)
  - No impairments
  - No concerns
  - RUAA has been reviewed by TCEQ
  - No change recommended in the segment's WQS

Red River Basin
Reach V



Questions?

RED RIVER AUTHORITY OF TEXAS

Clean Rivers Program Partner Since 1991

NELAP Accredited Laboratory Since 2006

Contact Information

P.O. Box 240, Wichita Falls, Texas 76307

Phone Number: (940) 723-8697 ●Fax Number: (940) 723-8531

Hours of Operation: Monday –Friday 8:00 –5:00 ●Emergency Laboratory Services: (940) 636-8024